

THESIS

PERCEPTIONS OF THE NATIONAL DAIRY FARMERS ASSURING RESPONSIBLE
MANAGEMENT (FARM) ANIMAL CARE PROGRAM

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ABSTRACT

PERCEPTIONS OF THE NATIONAL DAIRY FARMERS ASSURING RESPONSIBLE MANAGEMENT (FARM) ANIMAL CARE PROGRAM

The National Dairy Farmers Assuring Responsible Management (FARM) Animal Care program provides guidelines for farms producing 98% of the U.S. milk supply. Producers who sell milk to co-ops or processors participating in FARM must follow animal care standards defined by the program's technical writing group. Objectives of this study were to assess producers' perceptions about knowledge, experience, value, and reasons for considering FARM important, and to determine if perceptions differ based on producer demographics.

Quantitative and qualitative data were collected from a 30-question survey instrument. Quantitative questions aimed to address project objectives, and qualitative data were provided through one open-ended survey question that asked participants what they thought the main goal of the FARM program was. Additional feedback was offered by participants through providing text in comment boxes, writing on the back of the survey, or writing a separate letter and returning it with their survey.

Quantitative data were analyzed using principal components analysis and qualitative were analyzed through thematic analysis. Themes for the qualitative data were constructed through a set of initial codes which were developed from patterns found in the data. The use of triangulation, debriefing, clarification of researcher positionality, and audit trails were used to enhance trustworthiness of the study.

Dairy producers from collaborating dairy co-ops and processors were recruited via electronic and postal mail. A total of 487 respondents from 40 states completed the survey. Of the survey participants, $n = 414$ (85%) answered the open-ended question, and $n = 190$ (39%) provided additional qualitative feedback. Thematic analysis revealed five main themes: *producers on the defense, distrust of program, return on investment, anger, and nostalgia.*

Of respondents, 50.0% identified dairy co-ops or processors as the main source of information about FARM, and 73.6% reported being knowledgeable about FARM. More formal education and larger herd size were correlated with greater producer knowledge ($P < 0.01$ and $P = 0.04$, respectively). More producer input in the revisions of FARM was identified as a need by 83.3% of respondents. While 89.3% of respondents reported positive experiences with evaluations and relationships with evaluators, 45.6% did not think that FARM has value overall.

Females had a neutral impression of the value of the FARM program and males had a negative impression ($P = 0.02$). Greater respondent age was predictive of greater perceived value of FARM ($P < 0.01$). Age was significant in determining the reasons for considering FARM important ($P < 0.01$). Odds that respondents described FARM as important because it improved animal health and wellbeing over describing FARM as not important increased 7.2% ($OR = 1.072$; 95% $OR\ CI: 1.024, 1.122$) with each year of age. As age increased, respondents were more likely to describe FARM as important because it unified the dairy industry on animal welfare over describing FARM as not important ($OR = 1.095$; 95% $OR\ CI: 1.029, 1.164$).

Results indicate to increase buy-in and positive perceptions of producers, future versions of FARM should solicit producer input and target specific producer demographics for training and program promotion. The FARM program should address communication deficits, program inequalities, and provide more opportunities for producer input by fostering collaboration with

producers to co-produce program standards. Findings from this study can be utilized to inform communication strategies and increase producer buy-in in future versions of the FARM program.

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CHAPTER I: REVIEW OF LITERATURE

Demographic shifts, consumer pressures and perceptions, and societal ethics have contributed to the evolvement of the United States dairy industry. The number of people involved in agriculture in the U.S. has been steadily decreasing for the last century. Nearly 90% of Americans are two to three generations removed from production agriculture which has left less than two percent of the population living or working on farms to feed the remaining 98% (Leising et al., 1998). With the average food consumer being distant from the farm, and with societal ethics changing, farm animal welfare has become a concern for many.

Many consumers have never been on a farm in their life. This distance from agriculture and a lack of effective communication has caused erosion of trust between consumers and farmers. Distant from agriculture has also led to misinformation or erroneous perceptions of production agriculture that may contribute to public's distrust. For example, the U.S. Farmers and Ranchers Consumer Survey in 2016 revealed that 67% of consumer participants believed that large farms are owned by large corporations (USFRA, 2016). This however, is not true. In 2012, 77% of farms were reported as being family or individually owned (USDA, 2014). Taking advantage of the consumer's limited knowledge about agriculture, animal rights groups have utilized undercover videos of animal mistreatment to amplify trust issues and widened the gap between farmers and the public at large.

Dairy Industry Overview

Demographics

The United States dairy industry is currently ranked third in milk production (total pounds produced) around the world behind New Zealand and the European Union. In just 10 years (2004-2014), exports have increased four-fold (USDA, 2017). The United States dairy industry contributes \$33.5 billion to the US economy each year, and accounts for 9% of agricultural sales (USDA, 2014). While the number of dairy farms, producers, and cows are decreasing, milk production and herd size are increasing. In 1995, there were 139,670 dairy farms in the U.S., and as of 2013 there were 49,331 (USDA-NAAS, 1995, 2013a). Many small farms have ceased to operate as the industry has shifted towards larger herds. Between 2007 and 2012, the proportion of milk cow inventory on small operations declined while the proportion on larger operations increased (USDA, 2014; Barkema et al., 2015). Many larger herds are located in the Southwest and West regions of the U.S. in comparison to the Upper Midwest and Northeast (USDA-NAAS, 2013b).

In 2012, California led the country, with 1.8 million milk cows and \$6.9 billion in milk sales (USDA, 2014). Wisconsin was second, with 1.3 million milk cows and \$5.0 billion in sales, followed by New York, Idaho, and Pennsylvania (USDA, 2014). These five states accounted for 52% of both milk cow inventory and milk sales. Together, California and Wisconsin account for one third of U.S. dairy sales (USDA, 2014). The top ten states for dairy production include: California, Wisconsin, New York, Idaho, Pennsylvania, Texas, Minnesota, Michigan, New Mexico and Washington.

There are 2.1 million farmers in the U.S. with 64,000 of those being dairy producers (USDA, 2012). From 2007-2012 the number of U.S. dairy farmers decreased by 4.3% (USDA, 2012). Currently, the average age of the American farmer is 58.3 years old (USDA, 2012). This

number increased by 3 years since 2002, which means per year, the average age of the farmer is increasing by 0.3% (USDA, 2012). Women make up 5% of all principal dairy operators (USDA, 2014). The typical dairy producer in the U.S. is well educated and knowledgeable about new technologies and has become more business-minded (Noordhuizen et al., 2008).

At the end of 2012, there were 9.3 million dairy cows in the U.S. This number decreased 0.2% from 2007 (USDA, 2014). However, total annual milk production in the United States has increased by 31 billion pounds in just 10 years (USDA-NAAS, 2006, 2016). In 2016, the U.S. produced 212 billion pounds of milk (USDA-NAAS, 2016). Milk production per cow has also increased and doubled in only 38 years (11,243 pounds in 1987 and 22,774 in 2016; USDA-NAAS, 1978, 2016).

The increase in milk production and herd size and decrease in number of farms, producers, and total cow herd, is driven by economies of scale as the cost of production decreases with an increasing herd size (Wolf, 2003; Wilson, 2011). This increase in economies of scale is what initiated concern for animal welfare and what more specifically caused public concerns with “factory farms” (Rollin, 1995). Factory farms are also classified as “intensive farming” of animals. These farms hold many animals and produce large quantities of animal products at the lowest possible cost. Some dairy, swine, feedlot, and poultry operations are classified this way due to their large-scale, high-confinement nature. Some have proposed that current factory farm practices are responsible for the welfare challenges in the dairy industry.

Dairy Industry Challenges

The dairy industry faces many challenges and is under scrutiny for many of their routine production practices. A few of these challenges and practices include: management of labor and foreign-born workers, animal handling, high-confinement animal housing, pain management and mitigation, dairy cow lameness, and body condition.

As farms become larger, there is a need to increase hired labor to carry out daily tasks on the farm. Hired labor is vital to the success and profitability of dairy operations. Workers are responsible for the quality of care that animals receive on the dairy. Hired labor in livestock agriculture is predominantly foreign-born. A report by the American Farm Bureau indicated that if foreign-born labor was eliminated, U.S. agriculture would suffer an estimated loss of \$1.5 to 5.0 billion annually (American Farm Bureau, 2006). It has also been estimated that foreign labor represents 41% of the dairy workforce, and a 50% reduction of this labor category would result in the loss of 2,266 U.S. dairy farms (Rosson et al., 2009). In a survey administered to dairy farmers, expected probability of farmers exiting from dairy farming increased when the need for hired foreign labor increased (Susanto et al., 2010). The U.S. dairy industry has become increasingly dependent on foreign-born workers, and because of this the infrastructure is fragile. Government policy and Immigration and Customs Enforcement (ICE) raids can shatter this infrastructure within days and compromise not only human wellbeing but also the welfare of dairy animals.

The fragile structure of the workforce is a concern for many, and dairy worker training and safety is also a serious need. Agriculture is one of the most dangerous industries in the U.S. Ranking second to machinery, working with livestock is one the highest rated sources for dairy worker injury and death (von Essen and McCurdy, 1998). Many foreign-born workers may have

little to no experience working with dairy cows (von Essen and McCurdy, 1998; Román-Muniz et al., 2006; Garry et al., 2007). For this reason, proper training of workers is essential to ensure appropriate cow handling, worker safety, and animal treatment (Grandin, 1999; Roman-Muniz et al., 2006; Garry et al., 2007).

Most dairy farms in the U.S. are considered “high-confinement” operations due to their animal housing systems. High-confinement operations are classified as animal feeding operations (AFO’s). As defined by the USDA, an AFO is, “an operation that congregates animals, feed, manure and urine, dead animals, and production operations on a small land area and animals are confined for over 45 days a year” (NRCS, 2017). Animals raised in AFO’s do not graze or seek feed from pastures, fields, or rangelands as feed is brought to animals daily in their pens or cages (NRCS, 2017). Dairy AFO’s are considered concentrated animal feeding operations (CAFO’s) when farms meet the criteria above and have over 700 dairy animals.

Indoor housing systems like AFO’s and CAFO’s are designed to meet biological needs for food, water, hygiene, and shelter, but surveys of public and farmer opinion suggest that people think that pasture access is also important for the wellbeing of dairy cows (von Keyserlingk et al., 2017). Pasture access is also important to cows according to a study where cows’ motivation was assessed through weighted push-gates. The results indicated cows housed indoors are motivated to access pasture (von Keyserlingk et al., 2017). This motivation was shown to be driven by ability to be outside rather than hunger, and suggests cows want access to the outdoors and/or pasture.

Pasture-based systems are not considered high-confinement or AFO’s. Fewer than 5% of the 10 million lactating cows in the U.S. have access to pasture during the grazing season (von Keyserlingk et al., 2017). Although results from the national dairy survey reported 59.5% of

operations allow some type of pasture access for lactating cows (USDA-APHIS, 2014), this is not the primary housing type for lactating cows in the U.S. Only 6.4% of U.S. dairy operations use pasture as the primary housing type for lactating cows (USDA-APHIS, 2014), and as herd size increases this percentage drops significantly.

Housing type can have a direct influence on animal disease and cleanliness (Simensen et al., 2010). Cattle housed in high-confinement operations are at a greater risk for disease and health issues. Lameness is one of the most prominent welfare and animal health related concerns for the dairy industry (Rushen et al., 2007). Prevalence of lameness on dairies in the U.S. is reported to range from 16 to 55% (Cook, 2003; Espejo et al., 2006; von Keyserlingk et al., 2012; Cook et al., 2016).

Lameness is defined as any abnormality in the feet and/or legs that causes the animal to change the way in which it walks, and it can be caused by a variety of conditions such as: disease, environmental factors, and management practices. It can be assessed by either a three or five-point system (Adams et al., 2017; National Milk Producers Federation 2017; Sprecher et al., 1997). Greater scores on both scales indicate greater abnormality in gait which is indicative of more pain and discomfort.

Dairy characteristics, such as housing type, bedding material, and flooring design, have been shown to affect dairy cow lameness (Adams et al., 2017). High-confinement operations where animals have no access to outdoors have increased incidence of lameness (Haskell et al., 2006), and outdoor exercise has been shown to reduce lameness and improve animal health (Regula et al., 2004). Additionally, an indicative characteristic of high-confinement operations is concrete flooring. Concrete is an abrasive and unforgiving surface and is hard on the cow's feet and legs (Vokey et al., 200; Cook et al., 2004). When cows spend more time on concrete, there is

an increased risk for lameness and swelling of the knees and hocks (Cook et al., 2004; Haskell et al., 2006; Rushen et al., 2007). Rubber mats over concrete and outdoor exercise (off concrete time) are both reasonable management practices that can be used to reduce lameness incidence caused by high-confinement housing.

Pain experienced by lame cattle is often masked by their instinctive stoicism, leading to delayed detection and treatment of lameness (O'Callaghan et al., 2003). This delay in detection and treatment causes cows to experience chronic pain. Chronic pain is pain that outlasts the normal time of healing if associated with disease or injury, and is more difficult to recognize because of the difficulty of identifying behavior associated with existence of chronic pain (Mogil and Crager, 2004). Acute pain is provoked by a specific injury and disappears once the tissue has healed (Landa, 2018). High incidence of lameness equates to high number of dairy cattle experiencing pain. This creates an issue for animal welfare in the dairy industry.

Other areas where dairy cattle may experience pain is during routine practices and surgical procedures. Two examples of these are disbudding and dehorning. Consumer interest in animal welfare and pain associated with routine livestock management procedures is increasing (Rollin, 2004). Most dairy cattle are born with the ability to grow horns. The purpose of disbudding and dehorning is to minimize the risk of injuries to workers and other animals and to decrease the incidence of carcass downgrading due to bruising and hide damage (Stewart et al., 2009). Disbudding is a routine practice that destroys the corium cells that are responsible for horn growth. Methods for disbudding include the use of a hot-iron or caustic paste. Disbudding should take place within the first few days of a calf's life (Vickers et al., 2005; AVMA, 2014). Dehorning is a routine practice like disbudding, but it removes the horns of an animal after they have formed from the horn bud. This should take place at approximately two months of age

(AVMA, 2014). Methods for dehorning include the use of obstetrical wire, guillotine shears, or dehorning knives, saws, spoons, cups, tubes, or high-tension rubber bands (AVMA, 2014).

Pain mitigation associated with these procedures is essential to reduce distress and changes in behavioral and physiological states (Faulkner and Weary, 2000; Vickers et al., 2005; Allen et al., 2013; AVMA, 2014; Winder et al., 2017). Techniques for pain mitigation include use of anesthetics and analgesics. The decision to use these compounds relies on the dairy farmer and their veterinarian. If the farmer views their cows as production units rather than individual animals, it is possible to have reduced empathy toward the animals in painful situations (Bateson, 1991). While researchers studying dairy farmer attitudes towards pain mitigation have found that participants believe animals feel pain like humans do (Kielland et al., 2010), pain mitigation is not widely implemented by dairy producers.

In a study by Fulwilder, anesthetic use was reported by 12.4% of dairy owners and analgesia use was reported by 1.8% (Fulwider et al., 2008). Though it has been reported that the combination of a local anesthetic and analgesics (nonsteroidal anti-inflammatory drugs) can mitigate the onset of pain associated with dehorning (Heinrich et al., 2009; Stewart et al., 2009; Coetzee, 2011; Winder et al., 2017), there are currently no FDA-approved nonsteroidal anti-inflammatory (NSAID) labeled for this purpose in the U.S. (Allen et al., 2013, Coetzee, 2013).

Compounds classified as NSAIDs are available for oral use to alleviate pain in cattle, however to be legally administered, it must be used in an extra-label manner and in accordance to the Animal Medicinal Drug Use Clarification Act of 1994 (FDA, 1994). This act requires the drug to be prescribed by a licensed veterinarian for extra-label drug use. When drugs are used in an extra-label manner, the veterinarian assumes all responsibility for illegal residues in meat and/or milk. Because of this, many veterinarians are hesitant to prescribe extra-label drug use.

This causes both welfare and ethical issues for dairy farmers and veterinarians when considering NSAID's for pain mitigation in routine surgical procedures.

Underconditioned dairy cows have also been a concern to consumers (Roche et al., 2009). Body condition is determined by the amount of fat and muscle an animal has on its body. Body condition of dairy cows is determined by a five-point scoring system, where a score of 1 denotes an excessively thin cow and a score of 5 denotes an excessively fat cow (Ferguson et al., 1994).

Body condition scores (BCS) can be indicative of disease, underlying nutritional deficiencies, or inadequacies in herd management. BCS and lameness are highly associated with one another (Machado et al., 2010; Randall et. al., 2015. 2018). The lower BCS, the more likely the animal is to develop an abnormality in the feet and/or legs. BCS can also be affected by numerous individual and operational factors and tends to vary based on the stage of lactation the cow is in. When a cow is at the beginning of her lactation (post parturition) it is difficult for her to consume enough feed to meet energy requirements. She must rely on fat reserves during this time to meet energy demands. As milk production increases on the lactation curve, body condition decreases (Roche et al., 2009).

Although the previous discussion is not all encompassing, management of labor and foreign-born workers, animal handling, high-confinement animal housing, pain mitigation, dairy cow lameness, and body condition of dairy cows are serious challenges for the dairy industry and legitimate concerns for animal welfare worth considering.

Animal Welfare

History of Welfare and Models

According to the American Veterinary Medical Association, “animal welfare is how an animal is coping with the conditions in which it lives” (AVMA, 2018). If an animal is in a good state of welfare, it is healthy, comfortable, free of pain, well nourished, can express innate behavior, and is not in distress (AVMA, 2018). Welfare refers to the state of an animal, not necessarily to the care the animal is receiving. However, we can contribute positively to animal welfare through good animal care.

One of the first attempts to identify specific areas of concern in farm animal welfare occurred in the mid 1960’s. The Farm Animal Welfare Advisory Council (FAWAC) (aka Brambell Commission) met for the first time in the United Kingdom. Their meeting was in response to Ruth Harrison’s book *Animal Machines* (Harrison, 1964). Her book documented and exposed the intensive housing systems of veal calves, pigs, and chickens. She was one of the first to fight for “animal rights”. FAWAC met to brainstorm ways in which the agricultural industry could improve these practices. As a result, the committee recommended that animals should have the freedom to stand up, lie down, turn around, groom themselves, and stretch their limbs in these systems. These recommendations are referred to as the Brambell report (Brambell, 1965).

Based on the Brambell report, the Five Freedoms were developed. In 1979, the Farm Animal Welfare Council (FAWC) codified the Five Freedoms of Animal Welfare (FAWC, 1992). The Five Freedoms are freedoms that should unreservedly be given to animals under human care. They are as follows:

1. Freedom from hunger and thirst – by ready access to fresh water and a diet to maintain full health and vigor.
2. Freedom from discomfort – by providing an appropriate environment including shelter and a comfortable resting area.

3. Freedom from pain, injury, or disease – by prevention or rapid diagnosis and treatment.
 4. Freedom from fear and distress – by ensuring conditions and treatment which avoid mental suffering.
- Freedom to express normal behavior – by providing sufficient space, proper facilities, and company of the animal's own kind.

The Five Freedoms were the first model used to describe animal welfare. They have provided an excellent foundation for research, education, welfare audits, and industry regulations. Critiques of the Five Freedoms have focused on the model's focus on negative aspects of animal welfare, rather than considering the positive ones (McCulloch, 2012). The model has also been critiqued for not being practical, but rather "framework-like" when developing welfare assessments (McCulloch, 2012).

Shortly after the Five Freedoms were created, the U.S. government created the Animal Welfare Act (AWA, 1966). This act was created, much like the Brambell Report, due to public moral outrage. This outrage started when a November issue of Sports Illustrated highlighted the story of a family's Dalmatian "Pepper" who went missing. Pepper was dognapped and used unethically in a scientific lab for research (Phinizy, 1965). This article served to inform the public of two things: 1) many pet dogs were being stolen from the front lawns and sidewalks of the U.S., and 2) the thefts in large part were motivated by science's constant and growing need for laboratory animals (Phinizy, 1965).

As if this didn't cause enough outrage, shortly after this article was published, other families started realizing the same horrors for their family pets who went missing. Life magazine completed an investigation a few months later and estimated 50% of all missing pets were stolen by dognappers and were a majority of the time abused and sold for scientific research (Waymen, 1966). Expressed as photojournalism, this investigation haunted thousands. The most infamous

picture was of a completely emaciated dog named “Lucky”. Lucky’s picture was one of many that haunted many Americans, and more importantly, legislators.

Legislators were called to action with increased public and personal concern for laboratory animal welfare and created the Animal Welfare Act (AWA). This act set minimum standards for the handling, sale, and transport of cats, dogs, nonhuman primates, rabbits, hamsters, and guinea pigs held by animal dealers or pre-research in laboratories (AWA, 1966). The AWA was signed into law in 1966 and has been amended eight times since. Amendments have included but have not been limited to: exercise requirements for dogs and psychological wellbeing for primates, establishment of Institutional Animal Care and Use Committees (IACUCs), animal fighting prohibition, and protection of pets (USDA-NAL, 2018).

After the AWA was signed into law, the welfare of animals seemed to be improving around the nation. That was until the video titled “An Unnecessary Fuss” was released in 1981 by the organization People for the Ethical Treatment of Animals (PETA). This video shed light onto the completely barbaric head trauma research being completed on monkeys at the Silver Spring Laboratory. This research violated the AWA and PETA sent an undercover researcher into the lab to record all of it. This was a black eye for researchers and gave rise to animal rights groups like PETA.

After this, a plethora of literature on moral philosophy regarding the ethical treatment of animals became available to the public (Singer, 1975; Rollin, 1981; Reagan 1983). This started ethical conversations around animal welfare and solidified the acceptance of animals as sentient beings (Rollin, 1981). James, Skinner, and Watson studied this and revealed that there is a difference between sentient and cognizant beings (James 1890; Watson, 1928; Skinner, 1953). Sentient beings can perceive or feel things while cognizant beings are able to have knowledge or

be aware of feeling things. This gives differentiation between the way humans feel things and the way other animals do.

Animal sentience is an area that has been investigated in over 2500 experiments across the world (Phillips, 2005). Researchers have studied multiple species ranging from chimps to dogs and from octopi to sea lions (Phillips, 2005; Bekoff, 2007; Rollin, 2017). After sentience of animals became accepted, scientists started to research animal welfare and emotions more frequently and it became a well-researched topic by the early 2000's (Marchant-Forde, 2015) (Figure 1.1.). This work led to the development of a second model of animal welfare.

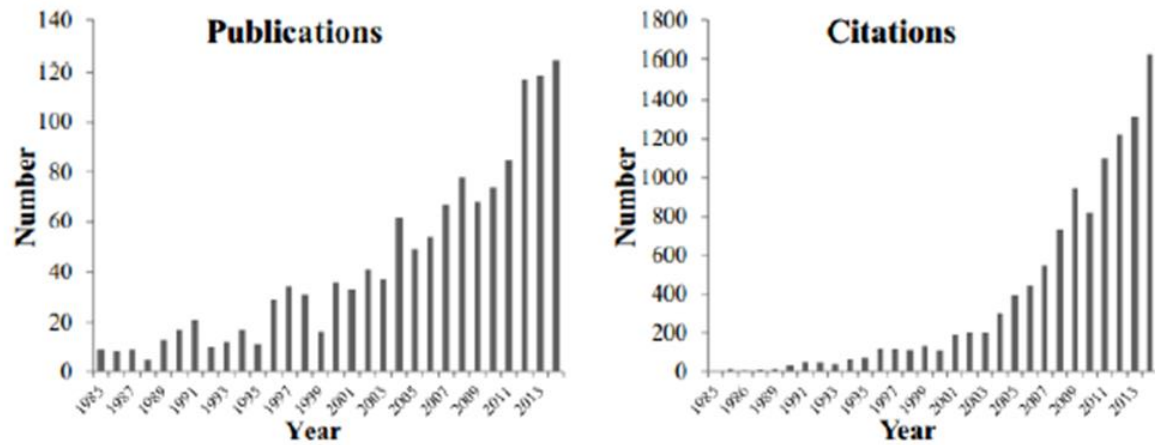


FIGURE 1 | Number of publications and citations of studies that include animal welfare and emotions over the time period 1985–2014 (Web of Science).

J. Marchant-Forde, Front. Vet. Sci., 28 May 2015

Figure 1.1. Publications and citations of animal welfare over time

The second model of animal welfare was created in 1997 by David Fraser (Figure 1.2.). In his model, Fraser suggests animal welfare encompasses three main ethical concerns: animals leading natural lives, animals feeling well (affective states), and animals functioning well (basic health) (Fraser et. al., 1997). Significant overlap occurs between the three and placing emphasis on one over the others could lead to extremely different conclusions about animal welfare. For example, if we evaluate the welfare of a feral cat versus a shelter cat, we could conclude they both have adequate welfare in one area according to Fraser's model. The feral cat would meet the natural living segment of the model, however may not meet the other two. Comparatively, a shelter cat would meet the functioning well part of the model with adequate veterinary care, while not meeting the other two. One could argue they indeed do not have "good" welfare because only one of the three needs are met. However, one could also argue that the other portions of the model are being met depending on situational states of the two animals. Thus, it is important when using this model to evaluate animal welfare, that all areas and the relationships they have with one another are understood.

Fraser, D., Weary, D. M., Pajor, E. A., & Milligan, B. N. (1997). A scientific conception of animal welfare that reflects ethical concerns.

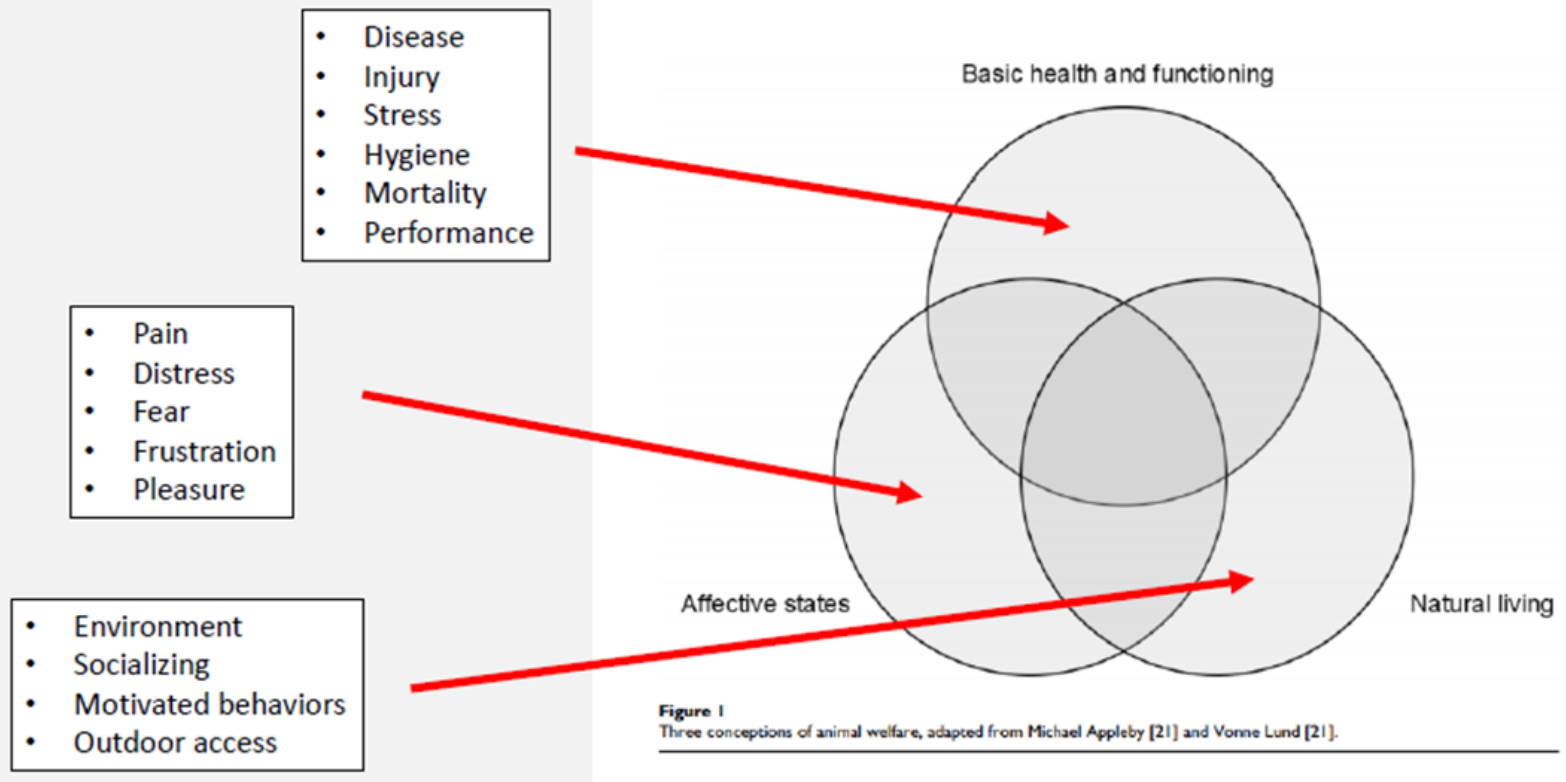


Figure 1.2. Frasier's model of animal welfare

The next model developed for animal welfare was suggested by Mellor and Stafford in 2001 as an extension of the Five Freedoms (Mellor and Stafford, 2001). It is called the Five Domains of Animal Welfare. They are as follows:

1. Freedom from water and food deprivation and malnutrition– prevented or corrected by ready access to fresh water and an appropriate diet in sufficient quantities and with a composition that maintain full health and vigor.
2. Freedom from discomfort and exposure– prevented or corrected by providing an appropriate environment including shelter and a comfortable resting area, whether outdoors or indoors.
3. Freedom from pain, injury, or disease– prevented or corrected by prevention or rapid diagnosis and treatment.
4. Freedom from fear and distress– prevented or corrected by ensuring conditions and treatment which avoid mental suffering.
5. Freedom to express normal behavior– prevented or corrected by providing sufficient space, proper facilities, and company of the animal's own kind.

The Five Domains of Animal Welfare were created to address some of the shortcomings of the Five Freedoms presented earlier. Domains 1- 4 focus on the physical health and functioning of an animal, and they all contribute to domain 5, the mental and/or emotional state of an animal. Unlike the Five Freedoms, the Five Domains provides provisional measures to ensure that domains are being met, unlike the Five Freedoms.

The last model that will be presented in this paper is an extension of the Five Domains. Unlike the Five Domains, positive emotional states to domain 5, and optimal welfare is achieved when negative mental states are avoided, and positive mental states are promoted (Green and Mellor, 2011). These modifications created a model that considered quality of life (QoL). The QoL concept of animal welfare explains the extension of the five domains as a transition from just preventing mistreatment to providing an animal with a life worth living (Green and Mellor, 2011). The utility of using quality of life to assess an animal's welfare is not yet fully defined, and currently involves subjective assessments.

Animal welfare has evolved through the years, much like the dairy industry. The creation of welfare models, and historical and scientific events have shaped the way in which society views animal welfare today.

Consumer Pressures and Perceptions

Over the last few decades, animal welfare has received increased attention from consumers, agriculturalists, activist, and researchers alike. The average American consumer has always had influence over many large retailers and processors with interests aimed towards food safety and quality (Drake, 2007). More recently however, there has been increased interest in animal care and housing of milk producing cows (von Keyserlingk et. al., 2009). Today's consumer is more concerned with where their food comes from and how it is raised, they support regulating farm animal care, and they are willing to pay more for food that is "humanely raised" (Grimshaw, 2014; Tonsor, 2011; Ellis et. al., 2009).

The U.S. Farmers and Ranchers Alliance conducts an annual consumer perception survey to identify improvement areas for the agricultural industry as seen by the consumer. In 2011, 70% of surveyed consumers said their food purchasing decisions are influenced by how the food is grown and raised, and 72% said they think about how the food is grown and raised while grocery shopping (USFRA, 2011). In 2016, 44% of participants indicated they had discussed animal care of farm animals with others over the past year and 64% said they did not believe animals on farms are well cared for (USFRA, 2016). Additionally, 61% of participants indicated they are very concerned about how food is grown and raised and how it will impact the health of children in the future (USFRA, 2016).

Consumers think animal welfare is important (Grimshaw, 2014; Prickett et. al., 2007), and they are concerned about cattle animal welfare specifically (Wolf et. al., 2016; Cardoso et.

al., 2016). They also care about the living conditions of those animals. In the National Food Labels Survey, better living conditions for farm animals was viewed as “very important” by 52% of survey participants, and “important” by an additional 32% (National Food Labels Survey, 2016).

Consumers are sourcing their information on agriculture from different groups and organizations. In a 2016 survey, 69% of participants said they get their information on agriculture from farmers at local farmers’ markets (USFRA, 2016). Comparatively in another survey, participants said the most credible source of information on dairy animal welfare was the United States Department of Agriculture (USDA), followed by Humane Society of the United States (HSUS), and the American Veterinary Medicine Association (AVMA) (Wolf et. al., 2016). Forty percent of participants of another 2016 survey indicated that videos and documentaries are the most influential platform for them to gain information about agriculture (USFRA, 2016).

Consumers are not the only stakeholder group who have focused attention on animal welfare. For the past decade scientists have conducted more research on animal welfare. Twenty years ago, articles with the term “animal welfare” in the title brought up 935 articles on the Web of Science, and today the same search brings up 3,688 articles (Web of Science, 2018). This number has tripled in the last twenty years, and the findings from this body of research have allowed the dairy industry to work together to reach the ultimate goal of improving the lives of cattle and farmers (von Keyserlingk et.al., 2009).

Farm animal welfare has been especially noticed by animal rights groups such as PETA and the Human Society of the United States (HSUS). Animal activists have fought for better living conditions, care practices, and welfare for farm animals citing a “lack of naturalness” and

perceived cruelty as standard procedures (Vanhonacker et. el. 2008). These criticisms have caused polarized debates between activists and those representing/working in the different livestock industries (von Keyserlingk et. al. 2013).

The increased attention to welfare by stakeholder groups has resulted in the formation of auditing programs in the U.S. to allow the different livestock industries to police themselves (USDA, 2017). In the United States, most livestock production industries have developed and implemented science-based animal care programs that provide guidelines to producers in response to consumer concerns. Assurances that animals are being raised in accordance to these guidelines are provided through these programs, and in some cases through audits rather than legislation. These programs range in type and make-up. While some of these programs merely establish suggested guidelines, others require mandatory auditing.

A Change in Societal Ethics

Animal welfare is complex, and everyone sees it differently depending on personal values/ethics and societal ethics. Over the last few decades, public perception of agriculture has shifted, and societal ethics of animal treatment have changed simultaneously. Fifty years ago, dogs and cats would rarely be anthropomorphized and considered “part of the family”, farm animals would not be seen as sentient beings, and farm animal welfare was not thought about regularly in accordance with cultural norms. Socio-ethical change such as this, has increased rapidly and it is important to understand the vital role it plays in the issue of animal welfare in agriculture.

Before delving into societal (social) ethics, it is important to understand the difference between Ethics₁ and Ethics₂. Ethics₁ (morality) is the set of beliefs that society, individuals, or a subgroup of society hold about good and bad, right and wrong, justice and injustice, and fairness

and unfairness (Rollin, 2006). Ethics₂ on the other hand, is the logical examination, critique, and study of Ethics₁. Dr. Temple Grandin is a prime example of someone who has worked with both domains. Much of her work has improved the way in which we handle animals at slaughter facilities (Grandin 1980, 1996). At the beginning of her work, she functioned at the level of Ethics₂. She logically examined and critiqued the way in which slaughter facilities functioned at the level of Ethics₁. During this time, she was hoping to change the practices of meat industry personnel at the level of Ethics₁, and that is exactly what she did.

Under Ethics₁ lies the differentiation of social, personal, and professional ethics (Rollin, 2006). Social ethics, or social consensus ethics as Dr. Rollin puts it, are the ethics that we believe to be universally binding to all members of society (Rollin, 2006). It is a “code of conduct” that governs what is acceptable and what is not. This set of ethics is not driven by individual morals, rather it is focused on what may be viewed as right, appropriate, or fair for people as a society. Without these ethics, there would undoubtedly be anarchy as these ethics hold society together in its framework.

These ethics are moldable and can evolve over time. Throughout the last few decades, we have seen societal ethics drive changes in agriculture. Production and consumption of foie gras was banned in some countries and US states due to the practice being “morally objectionable” (DeSoucey, 2010). Until welfare issues became known and studied around foie gras production, it was well accepted among society, especially in France. Societal ethics have also changed the way people view tail docking in dairy cattle (Schreiner, 2002) and feeding antimicrobials as outlined by legislation of the Veterinary Feed Directive (FDA, 2017).

Some agriculturalists would argue that these changes stem from consumer ignorance. In some cases, this could be true, however in most part it is fallacy. Many of these changes have

stemmed from a new set of societal ethics specific to the treatment of animals. In 2013 the US dairy system was identified as having many strengths, however consensus said the current structure of the industry lacked resilience to adapt in a changing social landscape (von Keyserlingk et. al., 2013). It is important as agriculturalists and researchers move forward to mitigate inadequate welfare of farm animals, that the power societal ethics have on issues such as welfare are acknowledged. Otherwise, regulation will drive all changes in the industry (for better or for worse).

The FARM Animal Care Program

To improve welfare on the nations' dairy farms, address concerns and increase consumer support, leadership from the dairy industry joined forces early 2008 with the goal of determining how to address growing concern from consumers and customers on how dairy cows are cared for in the United States. Trust needed to be built not only with the average consumer, but also with large domestic and international dairy customers (e.g. Hershey[®], Starbucks[®], Yum! Brands[®], Fairlife[®], etc.).

The National Milk Producers Federation (NMPF) who is the industry's policy and lobbying arm, and Dairy Management Inc. (DMI) who is the U.S. dairy promotion and checkoff association, collaborated in developing a comprehensive, rigorous animal care program as the best way to provide customers and consumers the confidence they sought that dairy cows were being treated humanely (Meredith, 2017). They wanted to capture the story of dairy while providing customers and consumers with verifiable proof points, so that they could trust in dairy and the way cows were being cared for. Ultimately, they knew that telling customers and consumers that the animals were well cared for would not suffice, and that facts, data, and science would provide appropriate assurances.

In 2009, the first version of the National Dairy Farmers Assuring Responsible Management (FARM) Animal Care Program was created. It was developed by a small group of individuals consisting of academics specializing in animal health, veterinarians, dairy cooperative staff, industry experts, and dairy farmers (Meredith, 2017). This group, slightly short of 20 individuals, would eventually be known as the Technical Writing Group (TWG). The TWG created three core elements to the program: 1) continuous improvement through producer participation, 2) second party evaluations at least once every three years conducted by trained evaluators, and 3) integrity verification of the program through third party evaluations. The program is revised every third year by the TWG. The TWG not only utilizes the expertise of professionals in the group for revision, but also utilizes sound science to make informed decisions. The goal of the program is to provide assurance to consumers and customers that dairy farmers raise and care for their animals in a humane and ethical manner.

The first version of the program was voluntary, and progressive producers were sought after as prime participants for the program (Meredith, 2017). Throughout the last two versions, the animal care requirements have become more stringent and participation has become mandatory for producers who belong to enrolled co-ops and processors. Version 1.0 was effective from 2009-2012, version 2.0 from 2013-2016, and the current version (3.0) went into effect January 1, 2017. There are three “silos” to FARM: animal care, environmental stewardship, and antibiotic stewardship. The animal care silo was the first, and is the only one required by co-ops and processors.

Currently 115 co-ops and processors from across the nation are enrolled in the animal care program. Co-ops and processors who choose to participate in the program set their producers under contract to follow the animal care standards outlined in the FARM Animal Care

Reference Manual (NMPF, 2017). These standards must be followed for every dairy animal on the farm with the exception of dairy beef animals (includes market steers and cull cows only if they have moved to pen and fed out for more than 30 days). If the producer fails to comply, they could be given a set amount of time to fix the issue, put on probation, or in the worst-case scenario, they could lose their milk market.

Continuous improvement is the founding principle of FARM. Unlike other livestock auditing programs, the FARM Program was not designed to be a “check the box” program. Rather, as an opportunity for producers to do things better, every day, for their cows and their consumers (Meredith, 2017). The idea of continuous improvement goes together with the idea of “evaluations” rather than audits, much like what other livestock industries do. An audit usually requires either a pass or fail and relies on strictly objective measurements. Unlike an audit, and evaluation is outcome-based and is encouraged to be used as a producer tool for continuous improvement. Both sets of evaluations (second and third party) are treated as so.

A second- party evaluation is completed by a certified evaluator. Evaluators must meet one of the following requirements to become certified:

- Must have a dairy science, animal science or equivalent BS degree plus two years dairy industry experience
- Must have at least two years of veterinary school completed plus two years dairy experience
- Must have eight years of experience in the dairy industry

Evaluators are required to recertify annually. Minimum participation requirements of the program are not listed for sake of brevity, but can be found in Appendix I. Requirements include, but are not limited to: documentation of employee training, posting of emergency contacts in parlor, calf management, permanent identification of animals, written protocols, written herd health plan, proper euthanasia training and techniques, visual observations of acceptable body

condition, locomotion, hock/knee lesion, and hygiene scores, and examination of environment, feed, and water availability.

Dairy producers who are enrolled in FARM will receive a second-party evaluation once every three years. Since 2009, over 45,000 second party evaluations have been completed throughout the US. During a second-party evaluation, an entrance interview, farm evaluation, and exit interview will occur. In the entrance interview, the evaluator and the dairy producer meet and go over program goals, what will happen during their evaluation, pledge of participation will be signed, and third-party verification will be addressed. During entrance interview, document review will take place. The evaluator must review and confirm documents exist and are accessible, make sure they are dated within the last 12 months, and must make sure they contain all components outlined in the question criteria (i.e. training materials and trainings must be documented). Once that is completed, the evaluator will then go out on the farm and complete visual observations. Then, the closing meeting will occur. The evaluator will create/edit any necessary improvement or action plans, review/advise the producer, highlight strengths of operation, go over any areas for improvement if there are any, and answer and questions.

If a producer has an evaluation and phase one (see below) criterion are not met, a Mandatory Corrective Action Plan (MCAP) is triggered. At this time, the producer has one year to fix the issue, or they are put on probation or suspended. Once a farm is put on probation, they cannot sell their milk to their co-op or processor until the issue is fixed. If they are suspended, the co-op or processor will not buy that producer's milk again. All phase one priority areas are new to version 3.0. If a producer has an evaluation, and phase two (see below) criterion are not

met, a Continuous Improvement Plan (CIP) is triggered. Up to the discretion of the evaluator, the producer must resolve any issues prior to the next evaluation.

Phase One Priority Areas

- Signed veterinary client patient relationship form (VCPR), ensures producer has established relationship with veterinarian and veterinarian oversees herd health plan
- Documentation of employee training and signed cow care/ethics agreement with all employees
- Zero tolerance of tail docking

Phase Two Priority Areas

- Written protocols for: newborn/milk-fed dairy calves, pain management, non-ambulatory animal management, and euthanasia
- Locomotion: $\geq 95\%$ of evaluated animals score 2 or less
- Body Condition Score: $\geq 99\%$ of evaluated animals score a 2 or more
- Hock/Knee Lesions: $\geq 95\%$ of evaluated animals score a 2 or less

Third party verification is used to demonstrate the program's integrity. It is not a 1:1 comparison, but rather an aggregate data comparison. As part of the FARM program, all evaluated farms are subject to third-party verification. A random sample of all eligible farms are selected each year.

Additionally, the FARM Animal Care Program has a zero-tolerance policy for willful mistreatment. Willful mistreatment can include, but is not limited to: applying a prod to a sensitive part of the animal, malicious hitting, beating, or dragging, inappropriate movement of a non-ambulatory animal, inappropriate on-farm slaughter or euthanasia, etc. When this is observed, the willful mistreatment protocol is triggered. For the producer to keep their access to the milk market, they must go through a third-party evaluation. If abuse is found, the facility is placed on probation. If there is not abuse found, appropriate reinstatement requirements will be followed.

A lack of producer input is evident in the FARM program. Since the beginning of the program, there has not been a formal collection of dairy producer input on how producers

perceive FARM. However, a public comment period was evaluated in version 3 that generated 400 responses from multiple stakeholder groups. One to three producers may serve on the TWG at a time, and as of June of 2018 there is one dairy producer who sits on the TWG. This one farmer is not representative of the population of dairy producers. Dairy producers drive the successful implementation of the program. They are the individuals ensuring program standards are followed daily on each of their dairy farms. Co-op and processor staff play a role in evaluating the implementation of the program, however they are not the individuals being asked to follow it.

It is beneficial to have a wide array of stakeholders on the TWG. However, the lack of dairy producer representation is evident. The lack of producer feedback and input is also evident. The lack of inclusion of dairy producers has caused negative perception amongst producers around the program. In response to this, we created a nation-wide dairy producer survey on the FARM Animal Care Program with the aim to collect scientifically-based data through sound experimental design that can be used to inform future versions of the program to increase positive producer perception and program buy-in. The objectives of this survey were to: 1) assess level of comfort with the program and knowledge, 2) determine which information sources producers use, 3) determine who should be informing stakeholders about the program, 4) determine preferred training platforms, 5) assess producer internal and external experiences with the program, 6) assess perceived value of the program, and 7) determine producer trust.

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CHAPTER II: A SURVEY OF DAIRY PRODUCER PERCEPTIONS OF THE FARMERS ASSURING RESPONSIBLE MANAGEMENT (FARM) ANIMAL CARE PROGRAM

Introduction

The United States dairy industry contributes \$33.5 billion to the US economy each year, and accounts for 9% of agricultural sales (USDA, 2014). The total number of dairy farms, producers, and cows is decreasing while average milk production, producer age, and herd size are increasing (USDA, 2012). The increase in production per cow and herd size and decrease in total farms, producers, and cows, is driven by economies of scale. The cost of production decreases with an increasing herd size (Wolf, 2003; Wilson, 2011). The shift in herd size has been responsible in part for public concern about the quality of care given to dairy farm animals.

Over the last few decades, animal welfare has received increased attention from consumers, agriculturalists, activist, and researchers alike. There has been increased interest from the public in cattle welfare (Wolf et al., 2016; Cardoso et al., 2016) and animal care and housing of milk producing cows (von Keyserlingk et al., 2009). Today's consumer is more concerned with where their food comes from and how it is raised, they support regulating farm animal care, and they are willing to pay more for food that is humanely raised (Grimshaw, 2014; Tonsor, 2011; Ellis et al., 2009). The average American consumer has had an influence over many large retailers and processors with interests aimed towards food safety and quality (Drake, 2007), and more recently has had influence over legislation regarding farm animal care (Dimitri et al., 2005; USDA-ERS, 2016)

The increased attention to welfare, especially by consumers, has resulted in the formation of auditing programs in the U.S. to allow livestock industries to police themselves (USDA,

2017). The National Milk Producers Federation (NMPF), the industry's policy and lobbying arm, and Dairy Management Inc. (DMI), the U.S. dairy promotion and checkoff association, agreed in early 2008 and decided that developing a comprehensive, rigorous animal care program would be the best way to provide customers and consumers the assurance that they sought regarding the humane treatment of dairy cows (Meredith, 2017).

In 2009, the first version of the National Dairy Farmers Assuring Responsible Management (FARM) Animal Care Program developed by a small group of individuals consisting of academics specializing in animal health, veterinarians, dairy cooperative staff, industry experts, and dairy farmers (Meredith, 2017). This group, slightly short of 20 individuals, would eventually be known as the Technical Writing Group (TWG). The TWG created three core elements to the program: a continuous improvement process to ensure the highest level of on-farm animal care by promoting best management practices (program standards), second party evaluations once every three years conducted by a trained evaluator, and integrity verification through third party evaluations. An aggregate random sample from all eligible farms is selected each year for third party evaluations.

The first version of the program was voluntary (Meredith, 2017), and the last two versions have become mandatory for producers who belong to co-ops and processors who participate in the program. The current version of the program (3.0) became effective January 1, 2017. There are 115 co-ops and processors from across the nation who are enrolled in the animal care program. The program is revised every third year by the TWG. The TWG utilizes the expertise of committee members and sound science to make program revisions.

Producer input on a nation-wide scale has not been evaluated to the author's knowledge. One to three dairy producers may serve on the TWG at one time, and provide input during

program design and revisions; however, they might not be an adequate representation of the diverse groups of dairy producers who participate in the program. Producers are the ones implementing the program standards, and for that reason their perspectives should be considered. We created a dairy producer survey to: 1) assess level of comfort with the program and knowledge, 2) determine which information sources producers use, 3) determine who should be informing stakeholders about the program, 4) determine preferred training platforms, 5) assess producer internal and external experiences with the program, 6) assess perceived value of the program, and 7) determine the level of producer trust in the program. We hypothesized perceptions would differ based on gender, age, herd size, region, and formal education level. This research aimed to assess dairy producer knowledge, attitudes and perceptions about the FARM Animal Care program and inform future versions of the program with improvement opportunities.

Materials and Methods

With assistance from university faculty, dairy producers, cooperative staff, FARM evaluators, and FARM program staff, a 30-question survey was developed (Appendix II). The survey consisted of 20 content-based questions focused on stated objectives, and 10 demographic questions. Format of these questions included: Likert scale, binary, open-ended, and categorical. On Likert scale questions, participants were asked to select a number on a 1 to 5 scale (Likert Scale, 1932), with 1 being “strongly disagree”, 2 “disagree”, 3 “neutral”, 4 “agree”, and 5 being “strongly agree”. The Institutional Review Board for Colorado State University reviewed the survey before it was disseminated.

Surveys were distributed in May 2017, and participants were recruited in two phases. Selection criteria for participants included: 1) be a primary dairy operator, 2) belong to a co-op

or processor who participates in the FARM Animal Care Program, 3) milk 10 or more cows, and 4) operate a grade A dairy.

Phase one of recruitment consisted of sending an email to all dairy co-ops/processors who participate in the FARM program. The email asked the dairy co-ops and processors if they would like to participate in our survey. Completely randomized samples were drawn from the 42 co-ops and processors who volunteered to participate. Samples were stratified by co-ops and processors and were calculated based on the minimum sample size needed for a representative draw of the population ($n = 379$). A minimum threshold of 10 surveys were sent per co-op and processor. A total of 1,549 surveys were sent via postal mail, using a modified Dillman Method (Dillman et. al. 2009), which consisted of a pre-survey postcard, survey, and follow-up postcard. Each was sent in two-week intervals. Surveys were sent in envelopes that contained a survey, a signed cover letter, and a return-addressed envelope. Completion of the survey was voluntary and anonymous, with no incentive for participation. This phase of recruitment gleaned $n = 286$ surveys (18% response rate).

It was expected we would receive a 24% response rate based on similar studies where response rate ranged from 14.5 to 28.7% (Papp et al., 2002; Heguy et al., 2016; Wolf et al., 2016; Voelz et al., 2017). The number of surveys sent in this phase of recruitment were calculated by expected response rate, minimum threshold per co-op and processor, and minimum sample size needed for a statistically significant representation of the population.

To maintain producer confidentiality, each survey was labeled with a unique code that corresponded to a name and address. The list of producer names and addresses was only used to determine who to send follow-up post cards to and was not referenced after final survey distribution. The survey and follow-up postcard had a link to the survey online. Although in a

previous Kentucky dairy producer survey, 62% of participants did not think internet was an effective information delivery method (Russell and Bewley, 2013), we provided this survey in an online format to target the younger and more technology-adapted dairy producers (the other 38% of producers).

In an effort to recruit more participants to reach the minimum sample needed, and to gather a better representation based on state, a second phase of recruitment was completed. In this phase of recruitment, survey invitations were extended to all producers associated with collaborating dairy co-ops and processors via an email blast. This strategy in conjunction with advertisement in a lay press dairy producer magazine and producers sharing information with their colleagues allowed us to reach our minimum sample size. Phase two of recruitment gleaned $n = 325$ additional surveys.

Data were entered into an excel spreadsheet and analyzed using R statistical software (R Core Team, 2018). The following questions were used to guide analysis:

1. Does region, gender, education, age, and herd size have an effect on producer's perceptions of knowledge?
2. Does region, gender, education, age, and herd size have an effect on producer's perceptions of internal and external experience?
3. Does region, gender, education, age, and herd size have an effect on producer's perceptions of value?
4. Does perception of internal experience differ based on if a producer has had a FARM Animal Care evaluation?
5. Does region, gender, education, age, herd size, and perceived value determine why producers think the program is important to them?

Surveys were categorized by region. Table 2.1 lists states included in each region. Region was determined by FARM program enrollment per state; this allowed each region to have similar amounts of program enrollees.

Table 2.1. States broken down into regions based on enrollees per state

| | |
|---------------------|--|
| Region | |
| Midwest (MW) | IA, SD, IN, OH, NE, MI, IL, MO |
| Northeast (NE) | NY, VT, MA, CT, PA, DE, ME, NH, NJ, RI |
| Southeast (SE) | FL, KY, MD, WV, NC, GA, TN, VA, MS, LA, AR, AL, SC, Washington D.C. |
| Southwest (SW) | NM, TX, AZ, CO, KS, OK |
| Upper Midwest (UMW) | MN, WI, ND |
| West (W) | OR, CA, ID, WA, NV, MT, WY, UT |

Principal components analysis (PCA) was used to find linear combinations of the given variables for each PCA to adequately describe most of the variation in the data. Principal components are used when multiple questions are highly correlated. This accounts for more of the variation in the data in comparison to using the questions separately. Each PCA contained a group of correlated questions pertaining to perception of knowledge, internal experience, external experience, and value.

Multiple regression models were used to determine the relationships between PCAs and the different demographics. Tukey's test of multiple comparisons, f-tests, and one-way ANOVAs were used to determine if perceptions differed based on demographics. Significance level (α) was set at 0.05, which indicated we accepted a 5% risk of concluding that there were not differences in demographics between perceptions, when in fact there were. This significance value was used for all tests with an exception to f-tests where a family-wise error rate was set to 0.10.

Multinomial logistic regression was used to predict probability of choosing specific question outcomes over others, and odds-ratio hypothesis tests were used to test whether each odds ratio equals one or differs significantly from one. Multicollinearity was not found when testing was performed. Mean responses were calculated for Likert scale data.

Results and Discussion

A total of $N = 611$ surveys were returned via mail ($n = 199$) and online ($n = 412$). Thirty were omitted because participants were not the primary operators of the dairy farms and an additional 94 were omitted because less than 30% of the survey was completed. These surveys were omitted because no content-based questions were answered, only demographic ones were completed. This left $n = 487$ surveys for subsequent analyses: 199 were collected via hard copy and 288 were collected online, 189 were recruited through phase one recruitment and 298 were recruited through phase two.

Demographics

Dairy producers in this study represented 40 states and the District of Columbia. Number of enrolled farms in the FARM program included in the National Milk Producers Federation (NMPF) database were compared to number of survey participants by state (Figure 2.1). The color scale describes the number of farms enrolled in the FARM database, and the dots represent the number of survey participants per state.

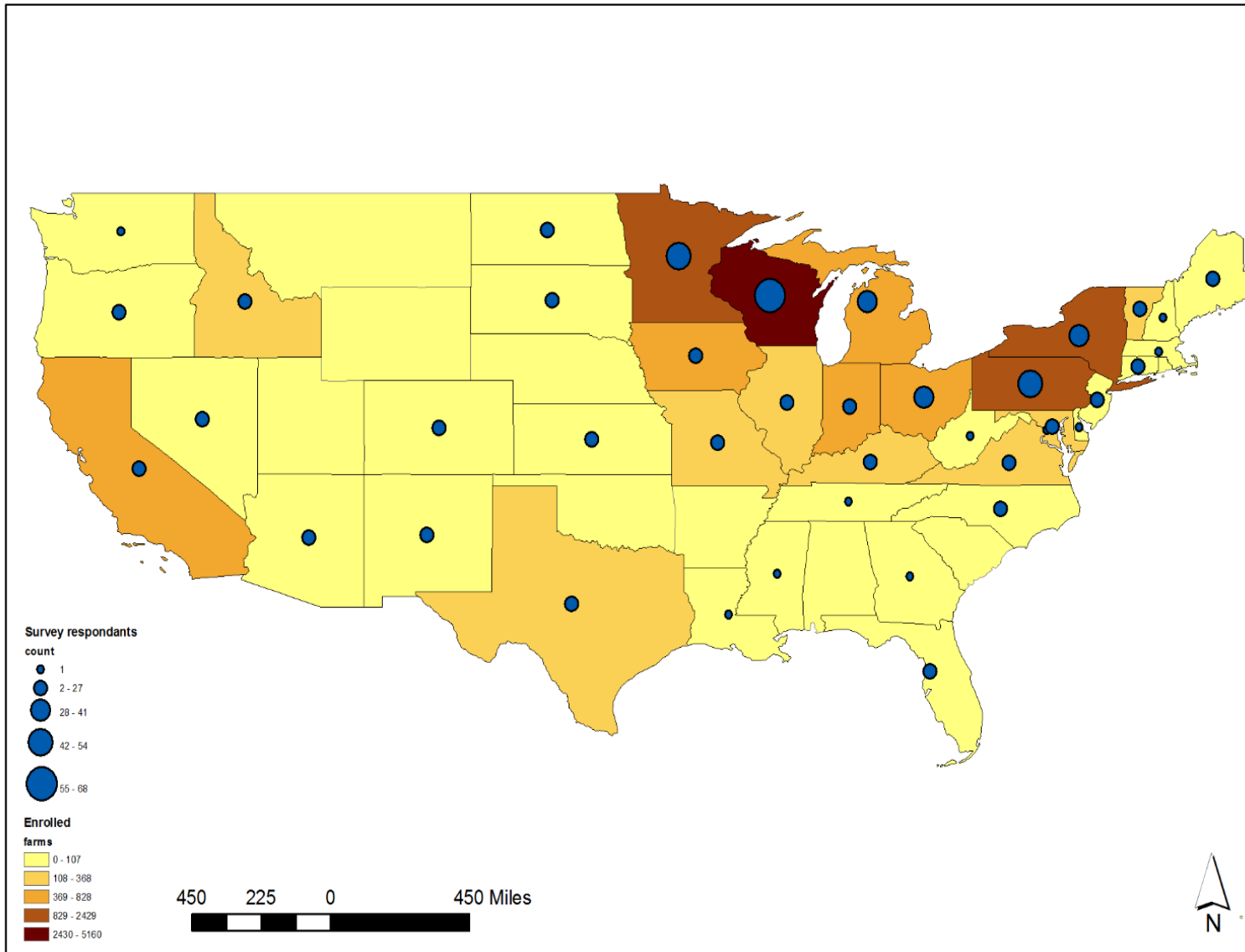


Figure 2.1. Number of farms enrolled in FARM per state compared to number of survey participants per state.

Map results indicate the survey sample was a fair representation of the population as the states with greater numbers of farms enrolled in the program (e.g. Minnesota, Wisconsin, Pennsylvania), had more survey participants. Similarly, states with fewer farms enrolled in the program (e.g. Washington, Kansas, North Dakota) had lesser survey participant counts. There were no surveys received from Utah, Wyoming, Montana, Nevada, Oklahoma, Arkansas, Alabama, South Carolina, and Rhode Island. Hawaii and Alaska have no dairy producers who participate in the FARM program, and were not included in the map.

Participating dairy producers represented 57 co-ops and processors from across the nation. The targeted population of dairy producers for this survey were producers who are enrolled in the FARM program. Census data represents all dairy producers in the U.S. For this reason, comparisons of survey and census data could have discrepancies.

Gender, age, and herd size was divided into brackets based on USDA defined bracket categories and were compared to USDA reported statistics (Table 2.2).

Table 2.2. Demographic results from the survey compared to Census of Agriculture statistics

| Demographic | Population Sample | USDA Census of Agriculture, 2012 |
|-------------|----------------------|-------------------------------------|
| | % | % |
| Gender | N = 482 ¹ | |
| Male | 83 | 86 |
| Female | 17 | 14 |
| Age | N = 477 ¹ | |
| < 45 | 42 | 28 |
| 45-64 | 51 | 57 |
| ≥ 65 | 7 | 15 |
| Herd Size | N = 479 ¹ | |
| 1-29 | 4.8 | 32.4 |
| 30-49 | 10.2 | 16.7 |
| 50-99 | 28.2 | 25 |
| 100-199 | 20 | 13.6 |
| 200-499 | 13.4 | 6.6 |
| 500-999 | 8.4 | 2.7 |
| 1000-1999 | 7.1 | 1.6 |
| 2000+ | 7.9 | 1.3 |

¹Total survey participants who answered demographic question

Eighty-three percent of survey participants were male while 17% were female (n = 482). In the U.S. Agriculture Census (2012), 86% of primary operators were reported as male and 14% female. Forty-two percent of participants were < 45 years old, 51% were between ages 45 to 64, and 7% were ≥ 65 years old (n = 477). Comparatively, the census reported 28% of dairy producers identifying in the < 45 age bracket, 57% identifying between ages 45 to 64, and 15% identifying ≥ 65 years old (USDA, 2012).

Income was divided into six brackets, also determined by USDA bracket categories. Roughly one-third of participants reported earning < \$50,000 (36.6%), 27.5% reported earning \$50,000-100,000, 13.4% earned \$100,000-250,000, 7.0% earned \$250,000-500,000, 5.7% earned \$500,000-\$1,000,000 and 9.7% reported earning > \$1,000,000 (n = 454).

Level of formal education was reported among participants in six brackets: elementary/primary school (7.8%), middle school (8.7%), high school (32.4%), technical/trade school (21.2%), bachelor's degree (24.2%), and post graduate (5.5%) (n = 472).

Knowledge

A series of six questions were asked to gain a better understanding of participants' perceptions regarding their knowledge of the FARM Animal Care Program. Most participants agreed they felt knowledgeable about the program (73.6%) and a majority understood their role as a producer in the program (76.3%) (Table 2.3). Only 33.6% had received information on version 3.0 of the program at the time of survey completion. The survey was administered in May of 2017, and version 3.0 of the program was released January 2017.

Table 2.3. Participant level of agreement with statements regarding their perception of knowledge

| Statement | Response N (%) | | | Total responses (n) | Mean ³ | SD |
|---|-----------------------|---------------|--------------------|---------------------|-------------------|------|
| | Disagree ¹ | Neutral | Agree ² | | | |
| I am knowledgeable about the FARM Animal Care Program. | 40 (8.5) | 84 (17.9) | 345 (73.6) | 469 | 3.83 | 0.92 |
| I understand my role as a producer in the FARM Animal Care Program. | 38 (8.1) | 73 (15.6) | 356 (76.3) | 467 | 3.85 | 0.92 |
| The dairy industry informs producers about the FARM program. | 76 (16.3) | 120 (25.8) | 270 (58.0) | 466 | 3.47 | 1.02 |
| I have received information on the new version (3.0) of the FARM Animal Care Program that was released January 2017. | 156 (33.6) | 101 (21.7) | 208 (44.7) | 465 | 3.11 | 1.26 |
| I understand the minimum participation requirements for FARM and the accountability associated with those requirements. | 86 (18.5) | 119 (25.6) | 260 (55.9) | 465 | 3.44 | 1.07 |

¹Strongly disagree and disagree answers combined

²Strongly agree and agree answers combined

³Mean response calculated based on answer to Likert scale questions, the higher the score, the more agreement with the statement in the row

When participants were asked if they were aware of the TWG, 72.4% responded they were not, although they reported being knowledgeable about the program. This could be attributed to participants not knowing about the TWG or not knowing what the TWG is called. When participants were asked who should be responsible for informing stakeholders about the program, 37.9% indicated co-ops/processors, 21.5% indicated promotional groups/producer associations, and 14.3% indicated FARM Program evaluators/staff as the responsible parties (Table 2.3). Half of participants stated their primary source of information on the FARM Program was their co-op or processor. Many co-ops and processors hire field staff to conduct FARM evaluations; this could explain why a majority of participants reported obtaining their information from this source. In a recent dairy producer survey, it was also found co-ops and

processors were one of the top three groups ranked by dairy producers who can influence dairy cattle welfare (Wolf et al., 2016).

Co-ops and processors were also who participants thought should be responsible for informing stakeholders about the program (37.9%) (Table 2.4.). It was surprising that only 14.3% of participants indicated FARM program evaluators and staff should oversee educating stakeholders about the program. These findings indicate that co-ops and processors might be seen as more resourceful and knowledgeable than FARM staff, hence more apt to deliver FARM related information to dairy producers.

Table 2.4. Summary of producer responses on questions related to information sources

| Question | Total Responses | Response N (%) | | | | | | | |
|---|-----------------|--|-----------------------|--------------------|---|--|---|-------------------------|---------------|
| | | Articles/ Publications ¹ | Co-ops/ Processors | Dairy Producers | FARM Program Evaluators/ Staff | Promotional Groups/ Producer Associations | Social Media/ Internet ¹ | University Extension | Veterinarians |
| Who should be responsible for informing stakeholders (consumers, producers, industry personnel, etc.) about FARM? | 441 | – | 167 (37.9) | 52 (11.8) | 63 (14.3) | 95 (21.5) | – | 25 (5.7) | 19 (4.3) |
| Which of the following sources do you use most often to gain information about the FARM Animal Care Program? | 448 | 47 (10.5) | 224 (50.0) | 16 (3.6) | 62 (13.8) | 10 (2.2) | 18 (4.0) | 10 (2.2) | 53 (11.8) |

¹Only provided as a response option on the second question

Principal components analysis was completed with questions in Table 2.3 for perceived knowledge (PCK). The PCK accounted for 60.3% of all the variance in the data. *F*-tests with a family-wise error rate (FEW) of $\alpha = 0.10$ were conducted to compare the effect of PCK on gender, age, herd size, level of formal education, and region. There was a significant effect of PCK on herd size and level of formal education ($P = 0.0044$ and $P = 0.0411$, respectively). A greater level of formal education and a larger herd size, generated a greater PCK value, meaning that producers with more cows or more years of formal education felt more knowledgeable about the program.

Although region was not statistically significant in terms of PCK, we found significant differences between regions. Tukey's procedure revealed that participants in the Northeast (NE) region were different from the those in the Midwest (MW) region ($P = 0.0298$), with the NE region appearing more knowledgeable about the program (Figure 2.2). Additionally, the NE region was different from the Southeast (SE) region ($P = 0.0726$), with the NE region appearing more knowledgeable about the program.

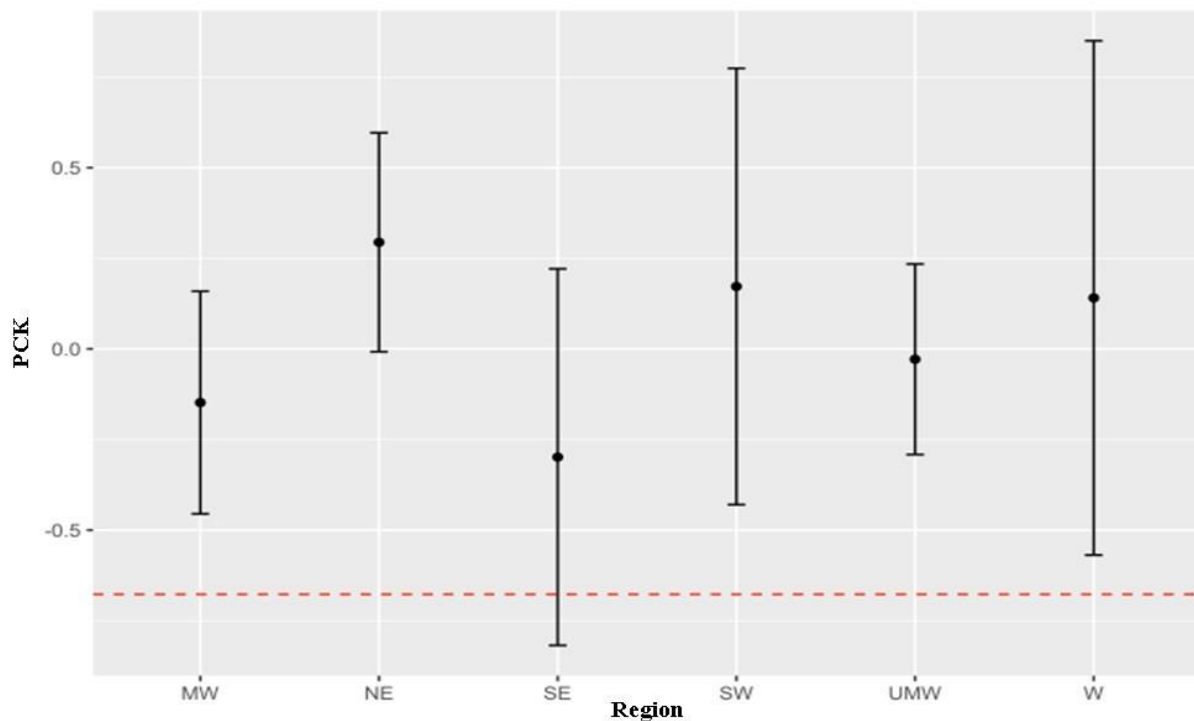


Figure 2.2. Principal component for knowledge (PCK) by region. PCK values are represented as least squared means which are adjusted mean estimates based on the model (black dots). The red line represents Neutrality.

The overall mean PCK score for someone who was of mean age (47 years), mean level of formal education (one year of post-high school education), and had a mean herd size (170 cows), averaged over gender and region, was estimated to be 0.0219 (CI: -0.1524, 0.1962). A participant would be absolutely Neutral on perceived knowledge if $PCK = -0.6773$. The above confidence interval does not contain absolute Neutrality, suggesting the average participant felt knowledgeable about the FARM program.

Although the average participant felt knowledgeable about the program, 8.5% of participants did not think they were knowledgeable and 17.9% felt neutral. Efforts could be focused on identifying producers who do not feel knowledgeable and offering them training. Of 456 respondents, 41.0% indicated that they would attend a training on FARM if available. When asked to select their most preferred training format, participants indicated the most preferred

method would be a packet of materials mailed/delivered to their farm (28.3%). Previous research has demonstrated that merely providing printed materials will not consistently impact knowledge and practice (Freemantle et al., 2005). Dairy producers are extremely busy, and because of this many cannot leave the farm for extended periods of time. This could contribute to why this format was identified as the most preferred by participants.

Other formats participants preferred included: on-farm training (25.7%), a regional workshop for producers (22.8%), a national conference (12.0%) and lastly, an online training/webinar (11.3%). Delivering a packet of materials to the farm is low cost and low input in comparison to hosting a meeting, workshop or delivering individual on-farm trainings. Meetings, workshops, and individualized trainings require multiple individuals to organize, facilitate, and effectively deliver the material. Mailing printed materials would be an easier way for co-ops, processors or FARM staff to provide dairy producers with information on the program as it is updated and revised, however it may not be as effective in comparison to other training formats. The least preferred method of training by dairy producers was in an online format. Similar findings have been shown in other dairy producer surveys where over half of participants did not think the internet was an effective information delivery method (Russell and Bewley, 2013).

Experience

A series of six questions were asked to understand participants' perceptions regarding their experiences with the FARM Animal Care Program (Table 2.5). Over half of participants reported having a good working relationship with their evaluator (59.5%) and thought a pre-evaluation meeting with their evaluator helped them understand what was going to happen during their evaluation (50.1%). Almost two thirds (65.1%) of participants indicated their FARM

evaluator was qualified to do FARM evaluations and 70.4% of participants thought their past evaluations were handled correctly. Relationships with FARM evaluators and evaluations were perceived positively based on these results.

When participants were asked if they thought dairy producers should have more opportunities for input in the design and revision of the program, 83.8% agreed they should. Less than half of participants (41.5%) indicated that they trust the TWG will make informed decisions when updating the program. Over one-third (37.1%) of participants thought third-party evaluations should not be used. Experiences associated with the program and TWG were not viewed as favorable by participants.

If trust is built between the TWG and dairy producers, and if producers are given more opportunities to voice their opinions in the design and revision of the program, producers may view FARM and third-party evaluations more favorably. Allowing for more producer representation on the TWG and increasing program communications could assist with this.

Table 2.5. Participant level of agreement with statements regarding their perception of experience

| Statement | Response N (%) | | | Total responses ³ (n) | Mean ⁴ | SD |
|---|-----------------------|---------------|--------------------|-------------------------------------|-------------------|------|
| | Disagree ¹ | Neutral | Agree ² | | | |
| I have a good working relationship with the evaluator who does my FARM Animal Care evaluation. | 60 (13.7) | 111 (25.3) | 261 (59.5) | 434 | 3.57 | 1.09 |
| My evaluator for the FARM Animal Care Program is qualified to do FARM evaluations | 44 (10.1) | 101 (23.1) | 285 (65.1) | 438 | 3.74 | 1.04 |
| In the past, the FARM Animal Care evaluations on my farm were handled correctly. | 37 (8.5) | 81 (18.6) | 307 (70.4) | 436 | 3.80 | 0.99 |
| A pre-evaluation meeting with my evaluator has helped me understand what will occur during a FARM Animal Care Evaluation. | 97 (21.0) | 134 (28.9) | 232 (50.1) | 463 | 3.33 | 1.12 |
| I trust the technical writing group will make informed decisions when updating the FARM Animal Care Program. | 180 (41.5) | 149 (34.3) | 99 (22.8) | 434 | 2.59 | 1.21 |
| Producers should have more opportunities for input in the design and revision of the FARM Animal Care Program. | 11 (2.5) | 60 (13.8) | 363 (83.3) | 436 | 4.32 | 0.85 |
| A third-party evaluation should be used to verify second-party evaluations. | 161 (37.1) | 163 (37.6) | 104 (24.1) | 433 | 2.73 | 1.20 |

¹Strongly disagree and disagree answers combined, ²Strongly agree and agree answers combined

³Some respondents answered “N/A”, disagree, neutral, and agree will not always sum to number of total respondents

⁴Mean response calculated based on answer to Likert scale questions, the higher the score, the more agreement with the statement in the row

Two principal component analyses were completed on questions related to perceived experience. The first principal component “internal experience” captured the first three statements in Table 2.5. The second principal component “external experience” comprised the last three statements in Table 2.5. The principal component for internal experience (PCI)

comprised perceptions towards FARM evaluators and evaluations, and the principal component for external experience (PCE) captured perceptions of the TWG and program in general.

One-way ANOVAs were conducted to compare the effect of PCI on demographics in gender, age, herd size, level of formal education, region, and if the participant had a FARM evaluation in the past. There was a significant effect of PCI on if the participant had a FARM evaluation in the past ($P = 0.0009$). Participants who reported having had an evaluation had a significantly more favorable internal experience with the program. Both participants who have had an evaluation and those who have not, had confidence intervals above absolute Neutrality (Figure 2.3).

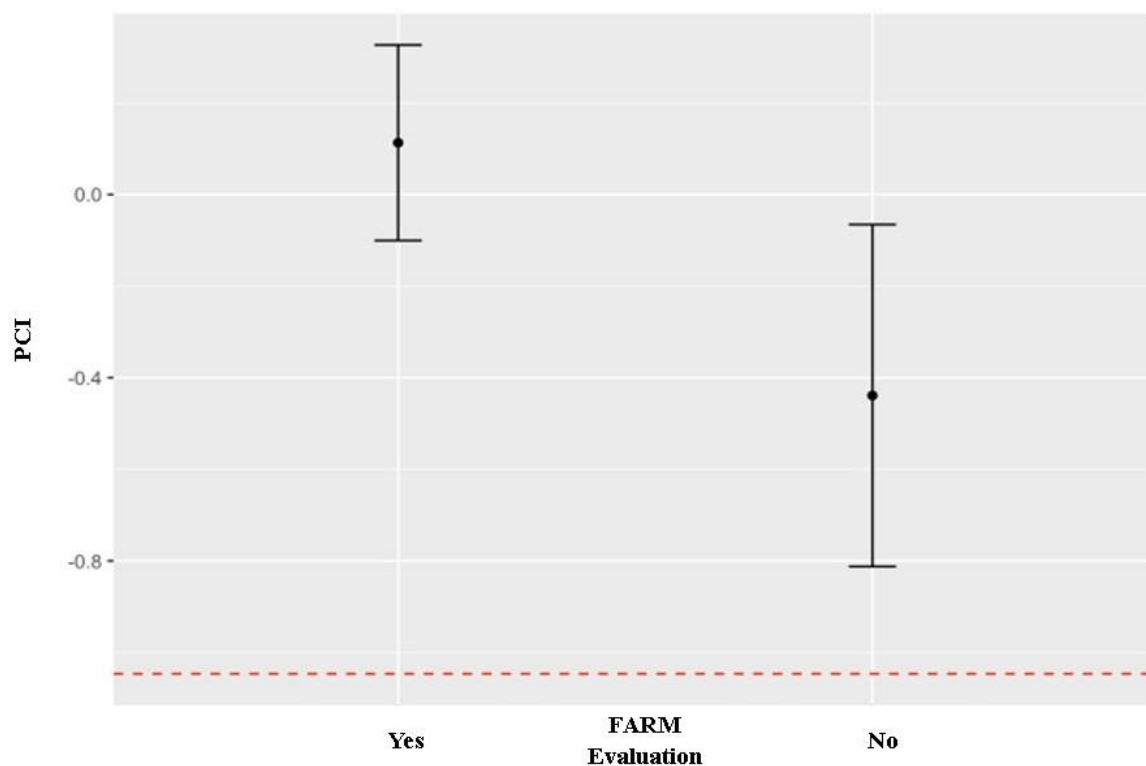


Figure 2.3. Principal component for internal experience (PCI) by whether or not the participant had a FARM evaluation. PCI values are represented as least squared means which are adjusted mean estimates based on the model (black dots). The red line represents Neutrality.

The mean PCI score for the average participant with the mean age (47 years), mean level of formal education (one year of post-high school education), and has a mean herd size (170 cows), averaged over gender and region, was estimated to be -0.1629 (CI: -0.3746, 0.0488). This confidence interval does not capture absolute Neutrality (-1.0470). This indicates the average participant has had a favorable internal experience with the FARM program and participants perceive their experiences with evaluations and their evaluators positively. From the perspective of the participants, FARM evaluators are doing a good job fostering relationships with participants, and are handling FARM evaluations correctly. For this reason, evaluators could potentially be better utilized as a resource to build producer confidence and trust through program promotion. Evaluators could also serve as part of the TWG. Having 1-2 evaluators in the TWG could allow for greater stakeholder representation which could make the program more robust and accommodating to other stakeholder groups. Evaluators bring unique insight to the program because they are implementing evaluations. Their insight could potentially be utilized in revisions of the program pertaining to the evaluation process, program standards, and producer rapport.

One-way ANOVAs were also conducted to compare the effect of PCE on demographics in gender, age, herd size, level of formal education, region, and if the participant had a FARM evaluation in the past. Results indicated PCE had a significant effect on gender ($P = 0.0388$). Both males and females reported an unfavorable external experience with the FARM program, with males having a more negative experience (Figure 2.3).

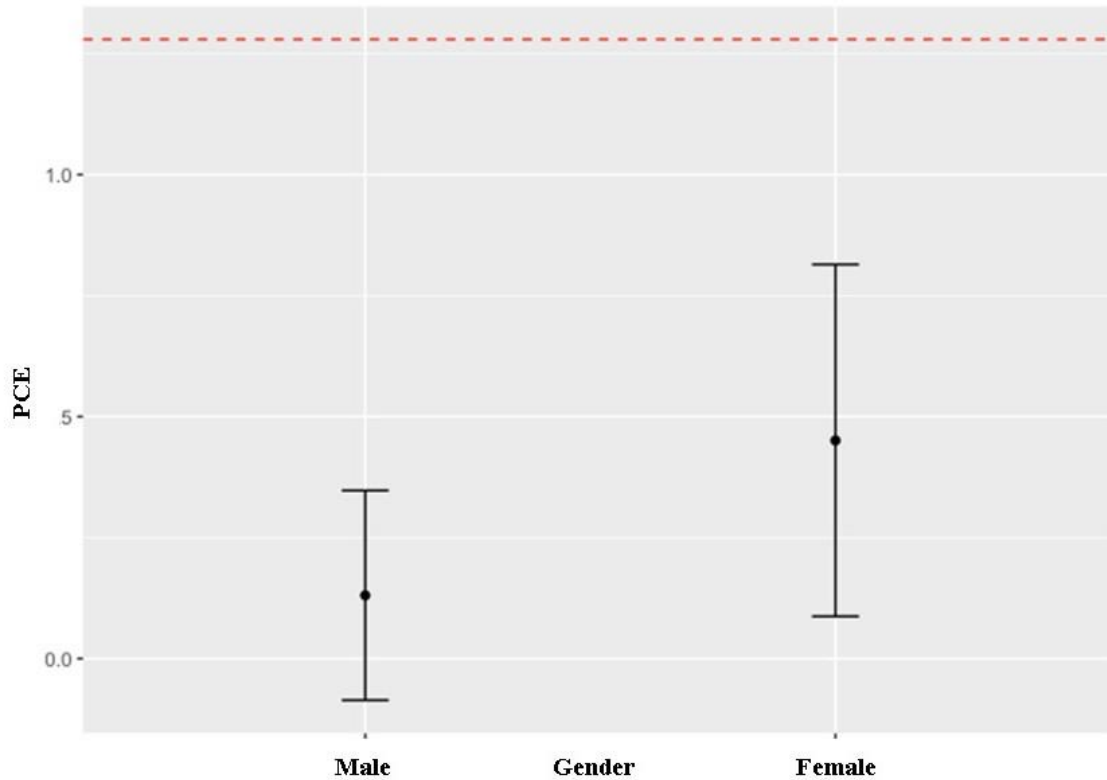


Figure 2.4. Principal component for external experience (PCE) by gender. PCE values are represented as least squared means which are adjusted mean estimates based on the model (black dots). The red line represents Neutrality.

The mean PCE score for someone who is of mean age (47 years), mean level of formal education (one year of post-high school education), and has a mean herd size (170 cows), averaged over gender and region, was estimated to be 0.2908 (CI: 0.0772, 0.5044). The confidence interval does not capture absolute Neutrality (1.2796), meaning the average participant reported having an unfavorable external experience with the FARM program.

Value

A series of four questions were asked to better understand participants' perceptions regarding value of the FARM Animal Care Program (Table 2.6). Almost half of participants (47.4%) did not think the program was beneficial to their cows' health and wellbeing and 62.3% did not think the program improved their farm's profitability. Participants were asked if they

thought the program addressed consumer hot topics in the dairy industry, and 46.4% indicated that it did. This was the highest regarded value statement in this set of questions. Overall, 45.6% of participants did not think the program was valuable to their operation.

Table 2.6. Participant level of agreement with statements regarding their perception of value

| Statement | Response N (%) | | | Total responses (n) | Mean ³ | SD |
|---|-----------------------|---------------|--------------------|---------------------|-------------------|------|
| | Disagree ¹ | Neutral | Agree ² | | | |
| The FARM Animal Care Program is beneficial to my cows' health and wellbeing. | 207 (47.4) | 113 (25.9) | 117 (26.8) | 437 | 2.58 | 1.26 |
| The FARM Animal Care Program improves my farm's profitability. | 272 (62.3) | 115 (26.3) | 50 (11.4) | 437 | 2.16 | 1.10 |
| The FARM Animal Care Program addresses consumer "hot topics" in the dairy industry. | 103 (23.7) | 130 (29.9) | 202 (46.4) | 435 | 3.18 | 1.17 |
| Overall, the FARM Animal Care Program is valuable to my operation. | 199 (45.6) | 139 (31.8) | 99 (22.6) | 437 | 2.51 | 1.22 |

¹Strongly disagree and disagree answers combined

²Strongly agree and agree answers combined

³Mean response calculated based on answer to Likert scale questions, the higher the score, the more agreement with the statement in the row

A principal component for value (PCV) was constructed from questions in Table 2.6. One-way ANOVAs were conducted to compare the effect of PCV on the demographics of gender, age, herd size, level of formal education, and region. There was a significant effect of PCV on gender, age, herd size, and region ($P = 0.0179$; 0.0333 ; 0.0240 ; and 0.0361 , respectively). Females had a neutral impression of the value of the FARM program, and males had an unfavorable one (Figure 2.5). The older the participant and the larger herd size the participant reported, the more value the participant assigned to the program.

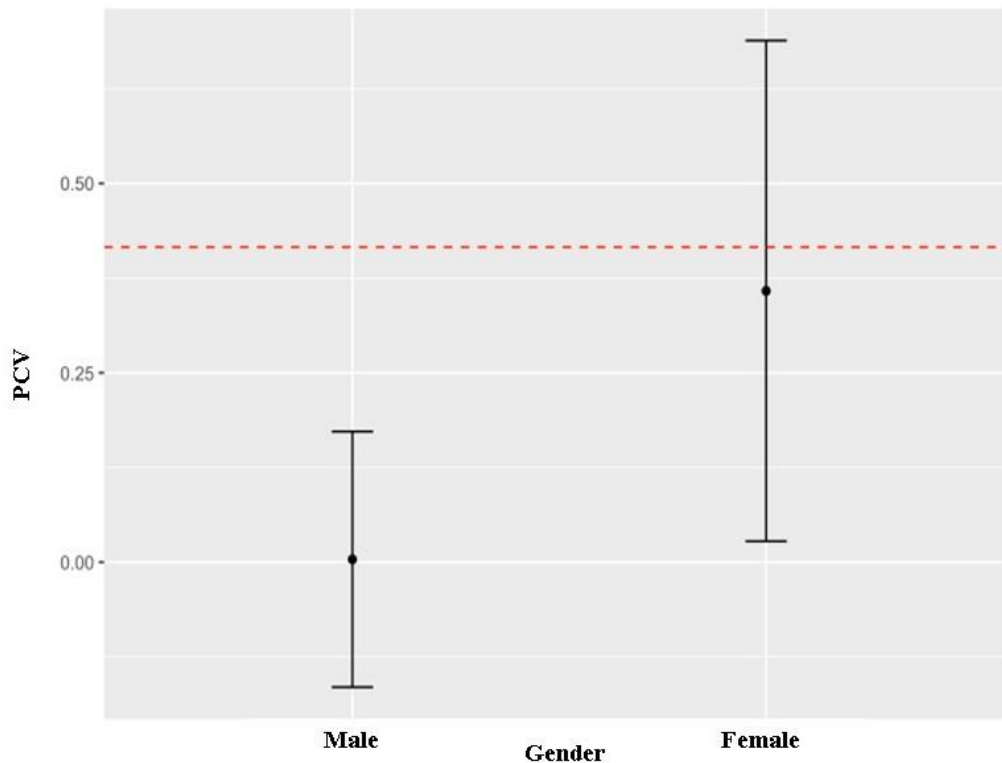


Figure 2.5. Principal component for external experience (PCV) by gender. PCV values are represented as least squared means which are adjusted mean estimates based on the model (black dots). The red line represents Neutrality.

Tukey's procedure revealed tendencies between PCV and region (Figure 2.6). The Northeast, Southwest, and West regions' confidence intervals captured the line of absolute Neutrality, suggesting the regions perceive value of the program neutrally. Comparatively, the Midwest, Southeast, and Upper Midwest regions' confidence intervals did not capture the line of absolute Neutrality and reside below this line. This suggest these regions have an unfavorable opinion of the value of the FARM program.

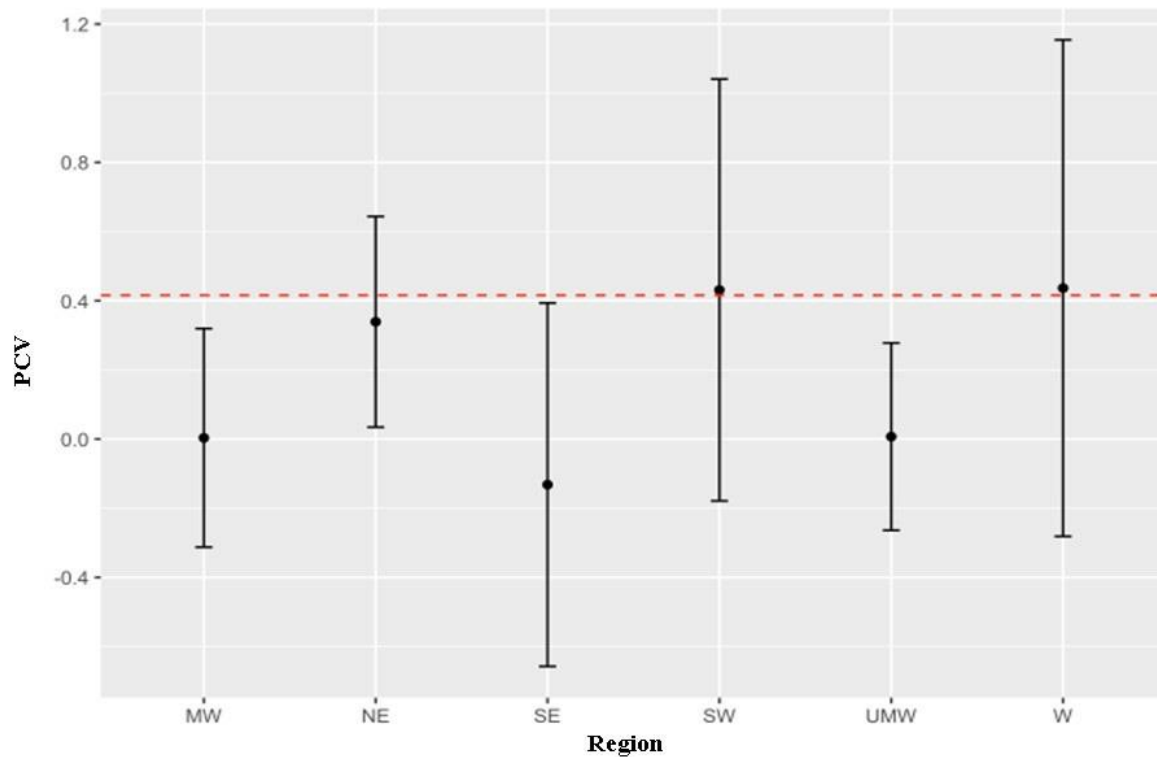


Figure 2.6. Principal component for value (PCV) by region. PCV values are represented as least squared means which are adjusted mean estimates based on the model (black dots). The red line represents Neutrality.

Program Importance

Participants were asked why the program was important to them (Table 2.7). Responses (n = 435) indicated that a majority thought the program was important because it increases consumer confidence in the dairy industry (4.16%). This was followed by participants stating the program was not important to them (32.9%).

Table 2.7. Participant responses indicating program importance

| Question #22 | Response N (%) | | | | | | | Total |
|---|---|--|-------------------------------------|--|--------------------------------------|---|---|-------|
| | Improves animal health and wellbeing ¹ | Increases consumer confidence in the dairy industry ² | Increases farm profits ³ | Helps send high quality milk into the marketplace ⁴ | Protects my milk market ⁵ | Unifies the dairy industry on animal welfare ⁶ | The program is not important to me ⁷ | |
| The FARM Animal Care Program is important to me primarily because | 27 (6.2) | 181 (41.6) | 2 (0.5) | 9 (2.1) | 62 (14.3) | 11 (2.5) | 143 (32.9) | 435 |

Superscript indicates answer number associated with primary question above

This question was analyzed with Wald tests to compare the effects of herd size, gender, age, and region. Output indicated age was significant ($P = 0.0073$) in terms of how participants answered why the program was important to them (Table 2.8). Age differed significantly between participants who answered the question with option 1 and option 7 ($P = 0.0032$) (Figure 2.7). Older participants were more likely to indicate the program was important because it improved animal health and wellbeing and it unified the dairy industry on animal welfare. Comparatively, younger participants were more likely to indicate the program was not important to them.

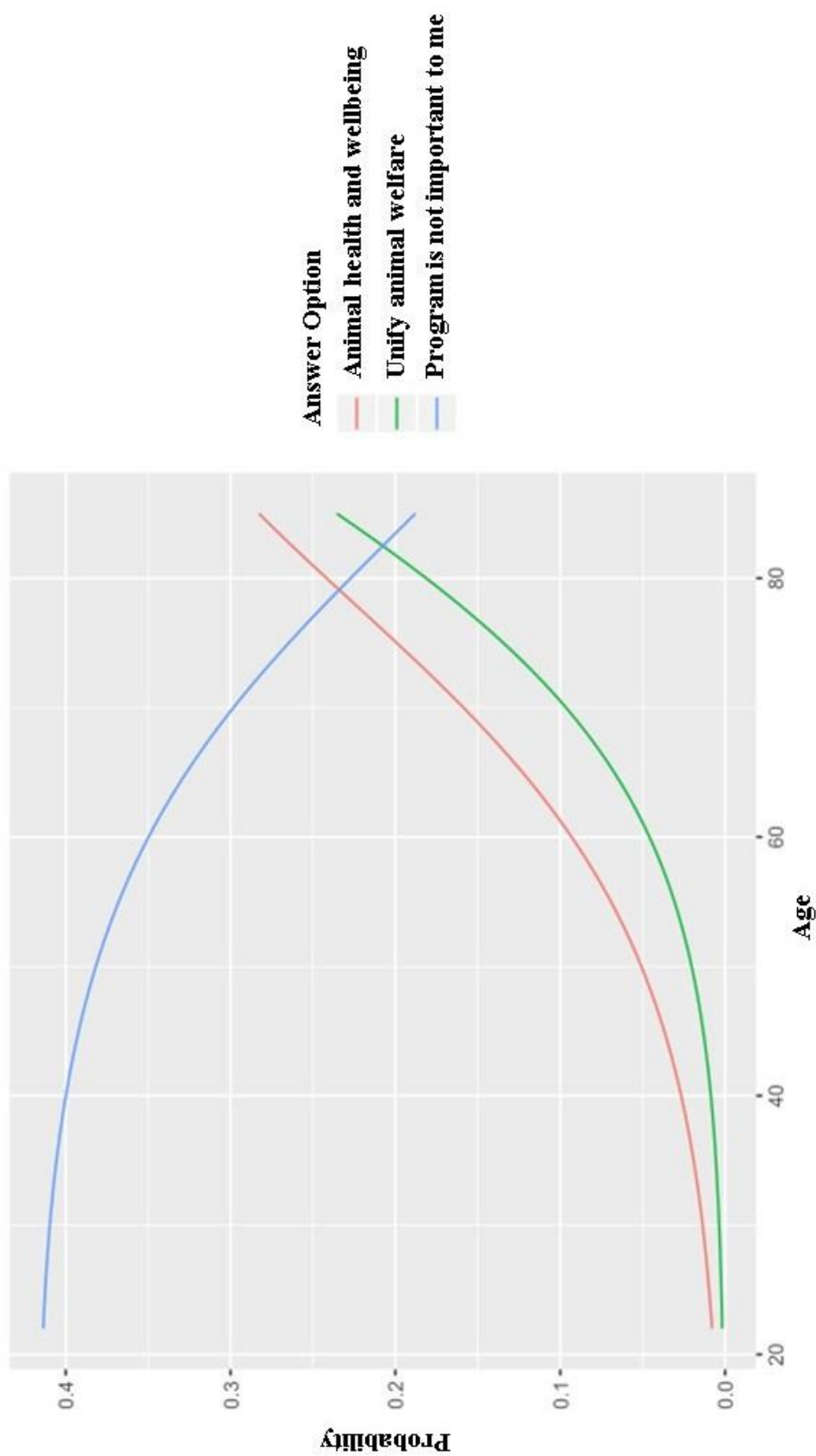


Figure 2.7. Probability of participants selecting answer options: improve animal health and wellbeing, unify the dairy industry on animal welfare, and the program is not important to me when asked why the program is important to them, based on age.

Statistical analysis revealed significant odds ratios pertaining to age and how the participants answered why the program was important to them. Odds that respondents described FARM as important because it improved animal health and wellbeing over describing FARM as not important increased 7.2% (OR = 1.072; 95% OR CI: 1.024, 1.122) with each year of age. Odds that participants described FARM as important because it unified the dairy industry on animal welfare over describing FARM as not important increased 9.5% (OR = 1.095; 95% OR CI: 1.029, 1.164) with each year of age (Figure 2.7).

Four additional significant odds ratios were evident through fitting a multinomial regression model. As participant age increased, they were:

- more likely to describe FARM as important because it unified the dairy industry on animal welfare over protecting their milk market ($P = 0.0021$; OR = 0.902; 95% OR CI: 0.845, 0.963).
- more likely to describe FARM as important because it unified the dairy industry on animal welfare over increasing consumer confidence in the dairy industry ($P = 0.0063$; OR = 0.918; OR CI: 0.863, 0.976).
- more likely to describe FARM as important because it improved animal health and wellbeing over protecting their milk market ($P = 0.0015$; OR = 1.085; OR CI: 1.032, 1.142).
- more likely to describe FARM as important because it improved animal health and wellbeing over increasing consumer confidence in the dairy industry ($P = 0.0052$; OR = 1.067; 95% OR CI: 1.020, 1.116).

The principal component for value (PCV) was used as a numerical predictor value and strip charts were created based on participants' responses to why they thought the program was

important to them (Figure 2.8). Participants who chose option 7 (“The program is not important to me”) were almost 1.5 standard deviations below the line of absolute Neutrality. These responses placed little to no value on the FARM program. Most participants who chose option 1 (improves animal health and wellbeing) were above the line of absolute Neutrality, which suggests these participants placed greater value on the FARM program because it improves animal health and wellbeing.

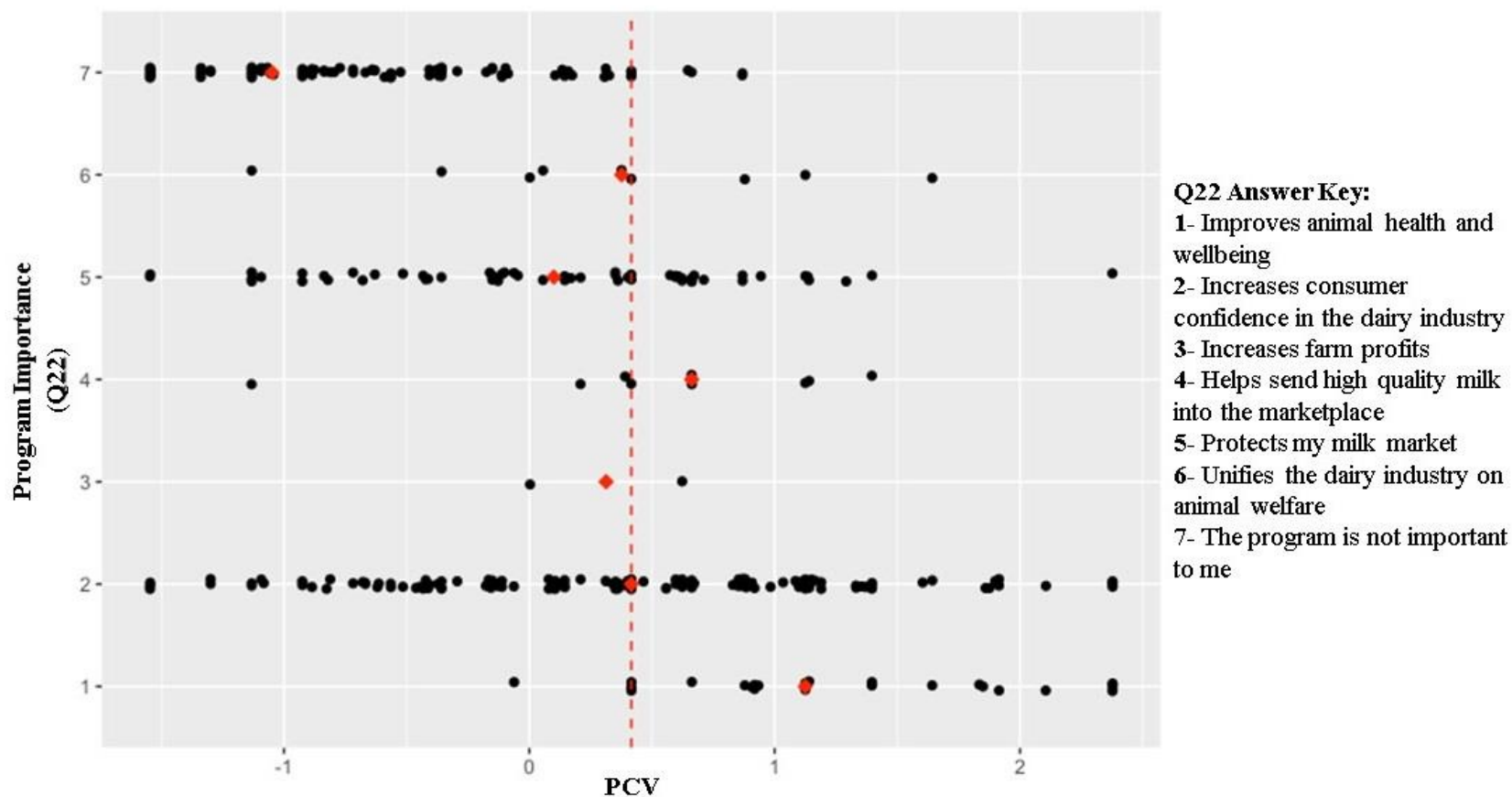


Figure 2.8. Strip charts based on participants response to why the program was primarily important to them and the principal component constructed for value (PCV). The red diamonds indicate the median of PCV at that level. The red dashed vertical line corresponds to absolute Neutrality.

A multinomial regression model was fit with responses to why the program was important to participants and with PCV. There was a significant effect of PCV on how participants answered why the program was important to them ($P < 0.0001$). All OR for choosing options 1 through 6 over option 7 were positive, ranging from OR = 4.215 to OR = 29.517. Figure 2.9 was generated by plotting predicted probabilities for options that participants chose for why the program was important to them with PCV at 95% CI limits.

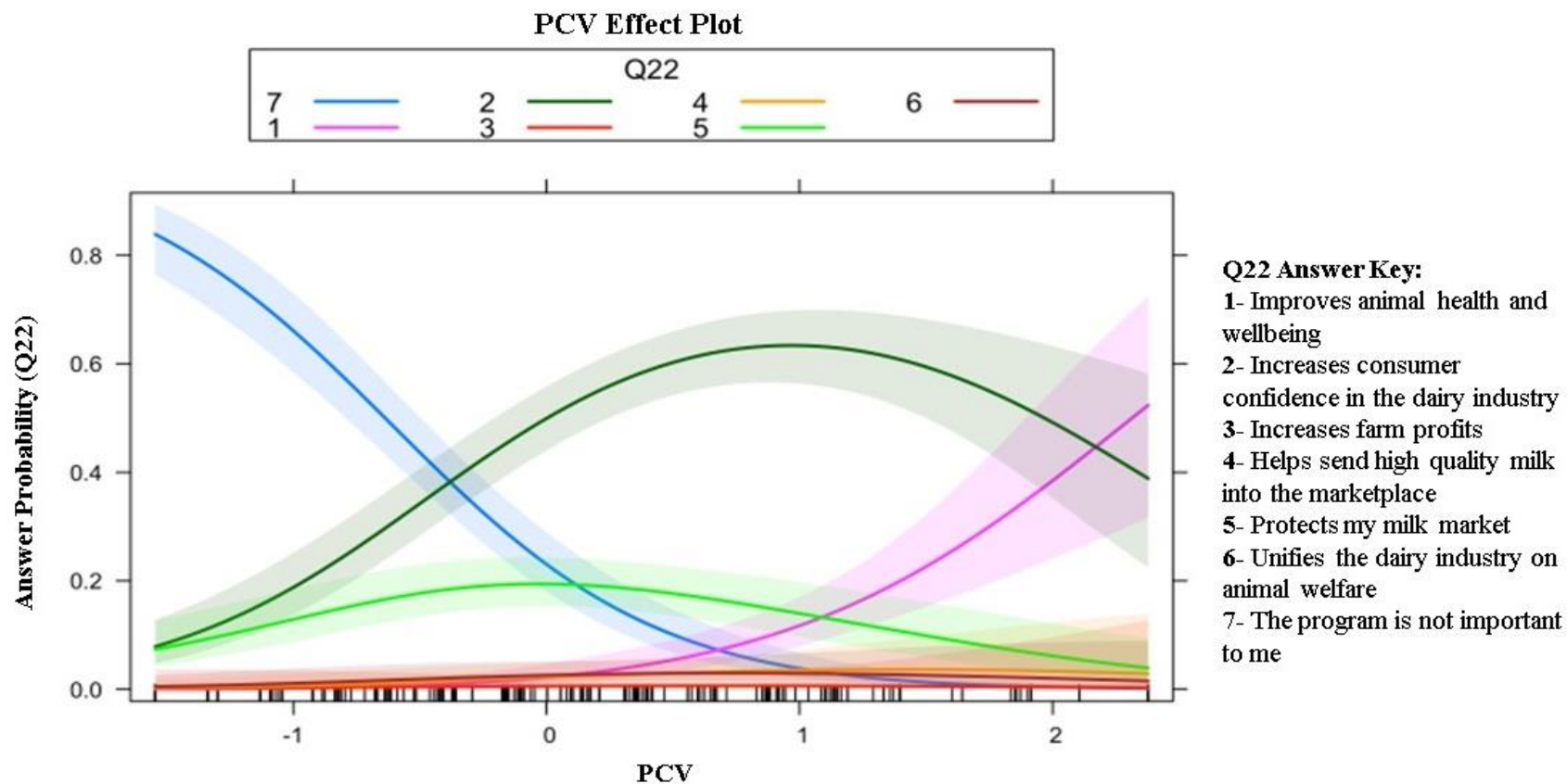


Figure 2.9. Effect plot created with the principal components constructed for value (PCV) and probabilities of participant responses on why the program is primarily important to them

Participants who had a lesser PCV score were more likely to answer option 7 (the program is not important to me), and participants who had a greater PCV score were more likely to answer option 1 (“Improves animal health and wellbeing”). At absolute Neutrality (0.4158) the probability of the participant selecting option 7 decreases significantly and the probability of the participant selecting option 2 (“Increases consumer confidence in the dairy industry”) increases significantly. Participants who chose option 7 were almost 1.5 standard deviations below the line of absolute Neutrality. These participants placed little value on the FARM program (also seen in Figure 2.8.). Most participants who chose option 1 were above the line of absolute Neutrality which suggests they placed greater value on the FARM program because it improves animal health and wellbeing.

Study Limitations

Since all operations with dairy animals in the population of FARM enrollees were not included in the sample, survey estimates were subject to sampling variability. Survey results were also subject to non-sampling errors such as omissions, duplications, and mistakes in reporting, recording, and processing the data. The effects of these errors cannot be measured directly. They were minimized through rigid quality controls in the data collection process and through a careful review of all reported data for consistency and reasonableness between multiple researchers.

Other limitations of this study include administering the survey in phase one to a random sample of producers from those co-ops and processors who agreed to participate. It would have been ideal to administer the survey to all co-ops and processors participate in FARM. However, we did not solicit producers’ participation without prior co-op/processor consent. This was not attainable because producer information was not available except with the co-ops and

processors' agreement to collaborate. Additionally, some co-ops and processors indicated they did not want to participate.

Conclusion

The results of this study demonstrate how some demographic differences among dairy producers affect perceived knowledge, value, and experience with the FARM Animal Care Program. Based on data analysis, we fail to reject the null hypothesis of observing perception differences based on demographics.

This study provides dairy industry professionals with information about how dairy producers perceive the FARM Animal Care Program. Dairy professionals can use this information to target producer groups based on demographics to build knowledge, potentially utilize evaluators and older dairy producers as spokespeople for the program, and build trust and perceived value of the program through including more producer input in the design and revision of future versions of the FARM Animal Care Program.

Many participants identified increasing consumer confidence as valuable to the program. A consumer study should be completed to determine if consumers are aware of the FARM program and to assess its effectiveness at increasing consumer confidence in the dairy industry. Programs where older producers and evaluators serve as spokespeople should be developed and evaluated for effectiveness on increasing producer perceived value and trust in the FARM program. Training methods suggested by participants in this study could also be implemented to evaluate their effectiveness in increasing producer knowledge. Qualitative methods such as interviews and focus groups could be employed to delve into survey findings and determine reasons for the perceived value and trust issues associated with FARM.

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CHAPTER III: THE UNHEARD VOICE OF DAIRY PRODUCER PERCEPTIONS OF THE FARMERS ASSURING RESPONSIBLE MANAGEMENT (FARM) ANIMAL CARE PROGRAM: A THEMATIC ANALYSIS

Introduction

The United States dairy industry contributes \$33.5 billion to the US economy each year, and accounts for 9% of agricultural sales (USDA, 2014). The total number of dairy farms, producers, and cows is decreasing while average milk production, producer age, and herd size is increasing (USDA, 2012). The increase in production per cow and herd size and decrease in total farms, producers, and cows, is driven by economies of scale. The cost of production decreases with an increasing herd size (Wolf, 2003; Wilson, 2011). The shift in herd size has been responsible in part for public concern about the quality of care given to dairy farm animals.

Over the last few decades, animal welfare has received increased attention from consumers, agriculturalists, activist, and researchers alike. There has been increased interest from the public in cattle welfare (Wolf et al., 2016; Cardoso et al., 2016) and animal care and housing of milk producing cows (von Keyserlingk et al., 2009). Today's consumer is more concerned with where their food comes from and how it is raised, they support regulating farm animal care, and they are willing to pay more for food that is humanely raised (Grimshaw, 2014; Tonsor, 2011; Ellis et al., 2009). The average American consumer has had an influence over many large retailers and processors with interests aimed towards food safety and quality (Drake, 2007), and more recently has had influence over legislation regarding farm animal care (Dimitri et al., 2005; USDA-ERS, 2016)

The increased attention to welfare, especially by consumers, has resulted in the formation of auditing programs in the U.S. to allow livestock industries to police themselves (USDA, 2017). The National Milk Producers Federation (NMPF), the industry's policy and lobbying arm, and Dairy Management Inc. (DMI), the U.S. dairy promotion and checkoff association, agreed in early 2008 that developing a comprehensive, rigorous animal care program would be the best way to provide customers and consumers the assurance that they sought regarding the humane treatment of dairy cows (Meredith, 2017).

In 2009, the first version of the National Dairy Farmers Assuring Responsible Management (FARM) Animal Care Program was developed by a small group of individuals consisting of academics specializing in animal health, veterinarians, dairy cooperative staff, industry experts, and dairy farmers (Meredith, 2017). This group, slightly short of 20 individuals, would eventually be known as the Technical Writing Group (TWG). The TWG created three core elements to the program: a continuous improvement process to ensure the highest level of on-farm animal care by promoting best management practices (program standards), second party evaluations once every three years conducted by a trained evaluator, and integrity verification through third party evaluations. An aggregate random sample from all eligible farms is selected each year for third party evaluations.

The first version of the program was voluntary (Meredith, 2017), and the last two versions have become mandatory for producers who belong to co-ops and processors who participate in the program. The current version of the program (3.0) became effective January 1, 2017. There are 115 co-ops and processors from across the nation who are enrolled in the animal care program. The program is revised every third year by the TWG. The TWG utilizes the expertise of committee members and sound science to make program revisions.

Producer input on a nation-wide scale has not been evaluated to the author's knowledge. One to three dairy producers may serve on the TWG at one time, and provide input during program design and revisions; however, they might not be an adequate representation of the diverse groups of dairy producers who participate in the program. Producers are the ones implementing the program standards, and for that reason their perspectives should be considered. We created a dairy producer survey to assess dairy producers' knowledge, experience, and perceived trust and value with the FARM Animal Care Program (Chapter II). Qualitative findings from the survey are described and analyzed in this paper. Results can be used to inform dairy industry stakeholders and future versions of the program with improvement opportunities.

Methodology

Participants and Setting

There are 2.1 million farmers in the United States, and 64,000 of those are dairy producers (USDA, 2012). The number of dairy producers has been decreasing each year, and from 2007-2012 this number decreased by 4.3% (USDA, 2012). An estimated 37,309 dairy producers participate in the FARM Animal Care Program (FARM Animal Care Program Database, 2017). The targeted population of dairy producers for the survey consisted of the farms enrolled in the program. Selection criteria for survey participants included: 1) be a primary dairy operator, 2) belong to a co-op or processor who participates in the FARM Animal Care Program, 3) milk 10 or more cows, and 4) operate a grade A dairy.

Experimental Design

With assistance from university faculty, dairy producers, cooperative staff, FARM evaluators, and FARM program staff, a 30-question survey was developed. The survey consisted of 20 content-based questions focused on stated objectives, and 10 demographic questions.

Nineteen of the content-based questions were quantitative, and the 20th question was open-ended, and it asked what the producer thought the main goal of the program was. If desired, producers could provide additional qualitative feedback either through providing text in comment boxes, writing on the back of the survey, or writing a separate letter and returning it with their survey. Data analyzed in this chapter were from the open-ended question and additional qualitative feedback.

The project was designed as a concurrent triangulation mixed method as explained in the project's conceptual map (Appendix IV). This method consisted of collecting qualitative and quantitative data at the same time through a survey instrument. Data were analyzed separately. This paper discusses analysis of the qualitative dataset. After this was completed, results were combined to analyze comparatively as a whole (Chapter IV). Concurrent triangulation design is used to confirm, cross-validate and/or corroborate findings (Creswell and Clark, 2011). It is often used to overcome a weakness in one method with the strengths of another. It can also be useful in expanding quantitative data through collection of open-ended qualitative data.

Data Collection and Recruitment

The Institutional Review Board for Colorado State University reviewed and approved the survey and project methodology as exempt (Submission: 17-7113H). Upon project approval, the survey was disseminated in May of 2017 in two recruitment phases. Phase one of recruitment consisted of sending an email to all dairy co-ops/processors who participate in the FARM program. The email asked the dairy co-ops and processors if they would like to participate in our survey. Completely randomized samples were drawn from the 42 co-ops and processors who volunteered to participate.

Samples were stratified by co-ops and processors and were calculated based on the minimum sample size needed for a representative draw of the population ($n = 379$). A minimum threshold of 10 surveys were sent per co-op and processor. A total of 1,549 surveys were sent via postal mail, using a modified Dillman Method (Dillman et. al. 2009), which consisted of a pre-survey postcard, survey, and follow-up postcard. Each was sent in two-week intervals. Surveys were sent in envelopes that also contained a signed cover letter and a return-addressed envelope. Completion of the survey was voluntary and anonymous, with no incentive for participation. This phase of recruitment gleaned $n = 286$ surveys (18% response rate).

A 24% response rate was expected based on similar studies where response rate ranged from 14.5 to 28.7% (Papp et al., 2002; Heguy et al., 2016; Wolf et al., 2016; Voelz et al., 2017). The number of surveys sent in this phase of recruitment were calculated by expected response rate, minimum threshold per co-op and processor, and minimum sample size needed for a statistically significant representation of the population.

To maintain participant confidentiality, each survey was labeled with a unique code that corresponded to a name and address. The list of producer names and addresses was only used to determine who to send follow-up post cards to and was not referenced after final survey distribution. The survey and follow-up postcard had a link to the survey online. Although in a previous Kentucky dairy producer survey, 62% of participants did not think internet was an effective information delivery method (Russell and Bewley, 2013), we provided this survey in an online format to target the younger and more technology-adapted dairy producers (the other 38% of producers).

To recruit more participants to reach the minimum sample needed for the population, and to gather a better representation based on state, a second phase of recruitment was completed. In

this phase of recruitment, survey invitations were extended to all producers associated with collaborating dairy co-ops and processors via an email blast. This strategy in conjunction with advertisement in a lay press dairy producer magazine and producers sharing information with their colleagues allowed us to reach our minimum sample size. Phase two of recruitment gleaned $n = 325$ surveys.

Data Analysis

Data analysis was driven by the following question: “What are the overarching perceptions dairy producers have of the FARM Animal Care Program?” Data were analyzed as two separate data sets: open-ended data and additional feedback data. To systematically explore the complexity of these data sets, we utilized thematic analysis. With thematic analysis, the researcher focuses on searching through data for themes and patterns (Glesne, 2010 pp. 187). These themes are created by first developing a set of codes. Codes were inductively interpreted from the data by the primary researcher. This process was conducted over a period of a three months. A final set of codes were developed and described in a code key for each dataset (Appendix III). Code overlap occurred between the data sets.

Additional researchers participated in the analysis to improve trustworthiness through triangulation. Coding took place in four sessions by the primary researcher, and because of this, memos were useful as analysis progressed. This allowed the primary researcher to continue where she had concluded her last session with ease. Suggested themes were recorded in memos, and the memos were used when the research team met to debrief on coding progression.

After the primary researcher finished coding, the code keys were distributed to the two other researchers on the research team. Each researcher reviewed 2/3 of the data each. This ensured each 1/3 of data was coded by at least two researchers. The team met and communicated

via email regularly to discuss and revise the codes as needed throughout the coding process. Percent agreement of codes was calculated at 79.6%.

The research team met after coding and discussed formation of themes based on codes. Five main themes emerged from the data: distrust of program, producers on the defense, nostalgia, compensation and efficiency, and anger.

Trustworthiness

The primary researcher believes concepts are socially constructed. Thus, procedures designed to enhance trustworthiness were used in this study. In Creswell (1998, pp 201-203) eight procedures are mentioned that can be utilized to enhance trustworthiness in qualitative research: prolonged engagement/observation, triangulation, peer review/debriefing, negative case analysis, stating researcher bias/positionality, member checking, rich description/ audit trails, and external audits. In this study, we used four of the eight procedures: triangulation, debriefing, clarification of researcher bias (positionality), and audit trails.

Triangulation of researchers analyzing data was used to cross-validate findings and crystalize codes and themes used during thematic analysis. Inter-rater reliability (percent agreement) was calculated to contribute to this as well. Other analytical research methods (ethnographic, narrative, and poetic analyses) were also explored briefly after thematic analysis by the primary researcher to analyze data in more depth. Results in this chapter focus only on results found from thematic analysis, however. Debriefing was used with the research team throughout data collection and analysis and audit trails were created by the primary researcher. The use of memos, a research journal, and emails ensured an audit trail was being created. Positionality was also acknowledged at the beginning of the study.

Positionality

Positionality as defined by Hay (2005), is the researcher's social, locational, and ideological placement relative to the research project or to other participants in it. Positionality has been chosen to be addressed up front to enhance trustworthiness. The primary researcher is considered someone who is an insider to the dairy industry as she has studied and worked on dairies the last eight years of her schooling. These dairies have ranged in size, type, and geographical location. The dairies resided primarily in the Midwest, West, and Upper Midwest regions and some were conventional dairies while others were niche' market oriented. She held positions on these dairies as an artificial insemination (AI) technician, milk harvester, and area manager. She has also held internships with educational and promotional groups that serve the dairy industry and has studied dairy abroad as part of her schooling.

International experience working on dairies specifically in Vietnam and New Zealand have especially shaped the primary researcher's views on the U.S. dairy system. While abroad, she learned about pasture-based systems and organic-based dairy farming. These are both non-traditional ways to dairy in the U.S., and for that reason the primary researcher had a shift in her agrarian ideology (ideology surrounding agriculture) upon returning from her education abroad. Her classical agrarian values of conservatism and land-ownership were two of many that shifted.

Through these experiences she has developed an affinity to the industry and this has affected her positionality. She is invested in assisting dairy producers to create the best possible circumstances for animal wellbeing, and because of this, conclusions may have led her to support her working hypotheses. To address this, she was continuously reflexive and addressed her subjectivity in a research journal during the study's progress.

The researcher's philosophical position as a foundation for research practices and methodological strategies was also considered to ground her research (Shannon-Baker, 2016). Acknowledging this gives readers a perspective of the researcher's ontology (ideas of reality) and epistemology (how we gain knowledge). The researcher considers herself an interpretivist meaning, she aims to understand her research through a reality that is socially constructed. This approach is characterized in Figure 3.1 taken from Glesne (2010).

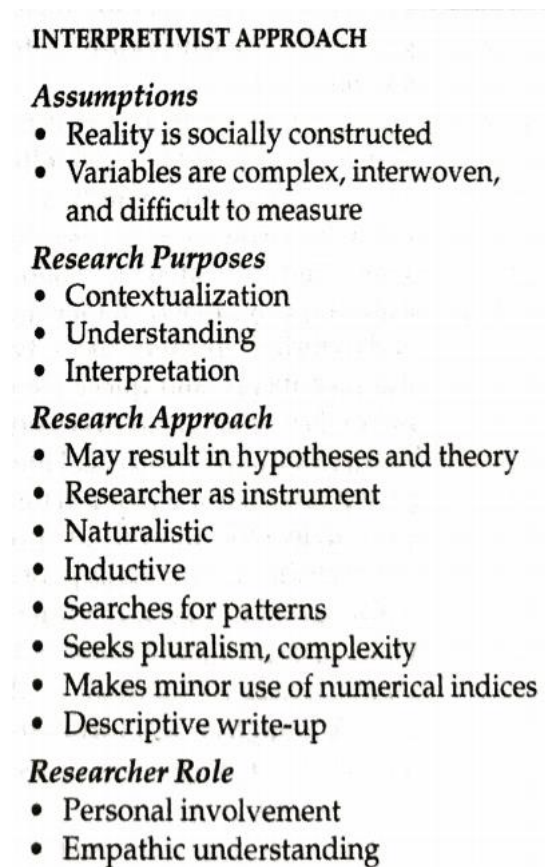


Figure 3.1. Characteristics of an interpretivist approach

The conceptual map of this project's research design can be seen in Appendix IV. Included in this map is the theoretical framework, project methodology, design, and interpretation.

Findings

Of 487 survey participants, n = 190 (39%) provided additional qualitative feedback and n = 414 (85%) answered the open-ended question. Thematic analysis revealed that dairy producers perceive the FARM Animal Care Program from three overarching approaches: distrust of program, producers on the defense, and return on investment. Within these three areas there were five main themes: *producers on the defense*, *distrust of program*, *return on investment*, *anger*, and *nostalgia*. *Distrust of program* was the most frequent theme, being coded by the primary researcher 416 times total in the data sets (Table 3.1). This was followed by *producers on the defense* being coded 398 times, and *anger* being coded 345 times, and *return on investment* being coded 283 times. *Nostalgia* was coded 187 times. Some of the themes had overlapping codes and concepts. Because of this, data from an individual could have been assigned more than one theme.

Table 3.1. Coding frequencies of themes identified through thematic analysis

| Theme occurrence ¹ | Theme | | | | |
|-------------------------------|---------------------|----------------------|-------|-----------|--------------------------|
| | Distrust of Program | Return on Investment | Anger | Nostalgia | Producers on the Defense |
| | 416 | 283 | 345 | 187 | 398 |

¹Theme occurrences calculated based on code frequencies

Distrust of Program

Overall, many participants expressed distrust in the FARM Animal Care Program. One producer said, “I do not trust the FARM program.” Reasons for this distrust depicted by producers through their comments included: program inequalities, stated goals versus reality, and outsiders running the program.

Distrust with the program broadly was also addressed. One producer wrote,

“It's embarrassing (the program). I speak for many producers. We've held meetings to discuss how awful this program is and our options to deal with it.”

It is possible that producers feel at a loss with their distrust in the program. This participant suggests that some producer groups are relying on one another to meet and discuss coping mechanisms. Other broad claims regarding distrust included:

“I could not think of a more affensive [*sic*] and condescending program than the FARM program and if it was not mandatory I would have no part in it.”

“The FARM program is a disgrace to the dairy industry.”

Inequalities

Perceived inequalities of the program regarding operation size and type were discussed by some producers. One producer stated, “I feel the FARM program is forcing certain management techniques on us that are not beneficial to every operation.” An organic producer stated, “This program is redundant and foolish on organic family farms.” Many of the standards farms are required to follow for organic certification are more stringent and detailed in comparison to the FARM program standards. This producer also stated that their operation “goes above and beyond FARM program requirements.” This point was further outlined by another producer who stated, “We far exceed the requirements of FARM with our organic certification which FARM ignores.”

Participants also expressed concern with program standards pertaining to large and small operations. One producer said,

“I personally think as a small family farm I do not think FARM is even applicable to my farm. I also believe small family farms should be excluded from FARM. FARM is irrelevant for a small operation.”

This outlines potential discrepancies between large and small operations. This point is further explained by other producers:

“Protocols and written documentation required are a waste of time for us as a family farm.”

“(The) FARM program is a lot more beneficial to large farms than[sic] small ones.

Consumer doesn't have a problem with most small operations, but large ones. Even though animal welfare may be just as good in large operations.”

“Most of the questions (on an evaluation) are geared towards larger farms. There are a lot of questions that make no sense (to smaller farms).”

Many of the smaller producers felt the program guidelines were not representative nor applicable in some instances to their operation. One example of a program inequality as pointed out by producers on the survey concerns training protocols. On both large and small operations, training protocols must be written and available to evaluators during evaluations. In many instances, the small family farm will not hire additional labor and instead rely solely on family to carry out day-to-day operations. Many of these family members have been working on the farm their whole life. To the point described by some of the producers, the written training protocols required by FARM will most likely never be looked at or used on smaller operations.

Other producers indicated unfavorable views with how the program represents smaller operations and concern for the FARM program helping to put smaller operations out of business. One producer said,

“Consumers don't like mega-dairies. Regardless of how well they are managed, they are a huge liability for the industry. That needs (to be) addressed by FARM as they won't have public credibility if mega dairies are supported and small herds put out of business.”

More support for small farms is suggested by this producer as well as a concern for what the public will think if only large farms are left. Another producer suggested that the program will directly cause this,

“You are why there will only be huge farms someday. People want to see our cows on pasture by the old red barn, not row after row of huge cow barns. Fix this.”

Others added, “It seems like the FARM program wants to put small farmer out of industry,” and one producer even claimed, “It seems all you (the program) care about is big farms.” Based on these responses, there is an indication that dairy producers who operate smaller herds do not feel supported by the program, with some even believing that the program may assist in putting them out of business.

Stated V. Reality

Producers suggested a discrepancy between stated goals of the program and what the program is doing in reality. In the first version of the FARM program, participation was voluntary. In version 2.0 however, participation became mandatory if the dairy producer’s co-op or processor chose to enroll in the program. This change was either not communicated well to producers, or there was a misrepresentation of program intentions, as described by producers in the survey.

Many participants indicated they did not foresee the program becoming mandatory. One producer explained, “The FARM program was presented to us as a voluntary program which is now mandatory.” Some producers indicated feeling betrayed, lied to, and deceived because of this. One producer explained,

“The way it (the program) was implemented was extremely dishonest as it started as a voluntary program and is still often advertized [*sic*] as voluntary when it was in fact forced down farmers throats.”

Another producer emphasized the same point by saying,

“I understood when the program started that the program would be voluntary and I thought it a good tool to engage dairy farmers. Now it has preferential mandates and is required in order to sell milk. I am now anti-FARM program.”

Both producers identified a form of dishonesty and because of it, developed an unfavorable view of the program. Others expressed similar concern as well when they wrote:

“The FARM program was introduced as a voluntary program to show that producers do care for their animals. It has turned into a mandatory requirement if we intend to market our product, it has put rules on our farms whether we used certain management practices or not. We have been deceived.”

“A voluntary program should not become a forced program- the program loses credit when that happens.”

Dairy producers have lost trust in the program, and some of these producers are concerned with the program interfering with management practices. A participant spoke to this and said,

“My primary concern with FARM is that it was presented on the ground as something that would never "require" us to change practices or be dropped. Then that changed with tail docking. Now I no longer trust anything they say.”

“When this program first started we (the farmers) were assured that this program would be used only as a guide to on farm management. That was a lie, now this program is

being used to regulate and force farms to use practices that may hurt their bottom line.

Not happy with certain aspects of the program.”

As stated on their website, the goal of the FARM Animal Care Program is to, “Earn the trust of consumers all over the country by holding our members to the highest standard of animal care” (FARM Animal Care Program, 2016). Additionally, the website states that the FARM program protects dairy farmer’s milk markets by providing proof points to help illustrate the high level of quality care provided to animals and the environment on the nation’s dairy farms.

Although these are the stated goals by the program, some producers question an increase in consumer confidence, high levels of animal care, and protection of milk markets. One producer said,

“This program has done nothing to improve my farm or our industry in the public's eye. If anything it had hurt [*sic*] our image because it makes people believe we needed this to tell us how to care for our animals and that without it we will be abusive and untrustworthy.”

Others expressed that the program did not improve consumer confidence, and in some cases thought it misled consumers. One producer said, “...this program is just a tool to mislead consumers that all producers are responsible managers, not true.” Another pointed out, “Where is the marketing (of FARM) to the consumer... This FOOD comes from a FARM certified farm! What does that mean? FARM program is a good thing- but how do we use it going forward so the producers feels that there is a benefit/education at the consumer level?” This producer entertains the thought that consumers may not know what the FARM program is. Further, they question if the program is improving consumer confidence.

While many producers mentioned a lack of improvement in consumer confidence, others argued that the program has not improved animal health and wellbeing as well. One producer explains,

“We were misled about this program. It was to help us from groups like PETA and to show the consumer we care about our animal. Instead we got mandatory (standards) when, in fact, it was our vet who years ago told us to do (said standards) to improve cow health.”

Numerous producers stated one of the standards they were upset with was the new tail docking ban implemented in version 3.0. of the program. Others were upset with other standards of the program such as water access and hygiene scoring. The FARM program states all standards are created with sound, science-based evidence (FARM Animal Care Program, 2016). Others believe the opposite, however. One producer wrote, “(the) rules and guidelines set by the FARM program need to be driven and set by solid research, and not based upon weak research and emotions.” Some producers also questioned the program being “animal care” focused,

“I was ok with the first FARM version that came out. Now we are on our third version and its getting out of control. We are getting further away from just "animal care". I think the leadership of NMPF is forgetting about all the hard work we do as dairymen to make a pure, high quality product.”

Additionally, some producers stated inconsistencies with program stated goals and reality in terms of milk markets. These producers did not think the program helped protect their milk market. They believed that the program was hurting them financially. Once producer said,

“The FARM program cost farmers thousands of dollars in lost productivity and leads to poor quality animal care by taking farmers out of the barn and away from their animals to file hours of paperwork.”

Another producer argued how the program does not protect producers’ milk markets, because “if you don’t choose to participate, you lose your milk market.” Thus, “forcing the program on producers, and giving us no choice on whether we want this or not.” This producer also said, “This program will ultimately be used to increase regulation and thereby will limit market access to producers.”

All the producers mentioned above experienced a form of distrust in the program because of differences in stated program goals and reality. They felt the shift from voluntary to mandatory, program standards, consumer confidence building, and protection of their milk market contributed to this.

Outsiders

Many participants attributed program distrust to the idea that “outsiders” were running the program and controlling how they run their operations. Outsiders were described as different stakeholder groups by producers. Some stated they were office dwellers, others indicated program staff, and some referred to the technical writing group specifically. One producer said, “Maybe everyone making the rules should actually milk cows for a year before telling us what to do.” Another said, “It’s great when people who have no immediate connection with dairy cattle and everyday farming are allowed to dictate and tell us how to do our job.”

Other producers strengthened the same concern by stating:

“We should not be told by nondairy farmers how to run our business!”

“We are being told what to do by people that may have never even been on a farm!”

Other participants felt people “outside” of the dairy industry were creating the FARM program. One participant touched on this when they wrote, “Why do we need someone else that is standing on the outside of the box and pointing at us saying, you need to do this or that?”

Another producer claimed, “It's just a game to play the rules established by people who have no idea what it takes to care for animals day in day out year after year.”

A few producers identified the TWG as outsiders. “These FARM rules are being encouraged by self-serving veterinarians, and coop [*sic*] leaders, and processors.” Another producer stated, “The committee (technical writing group) did a very poor job at looking at the whole picture when creating the program.” Many of the producers who mentioned outsiders such as the TWG or non-dairy individuals running the program, also mentioned a loss of trust in the program because of this.

Reasons for distrust in the program depicted by producers included: program inequalities, stated goals versus reality, and outsiders running the program. Alongside these, a feeling of outsider control and regulation created some distrust in the program as well. One producer stated, “This (the program) is nothing but a dictatorship and should be stopped and I have no trust in this program anymore.” Another used an analogy to compare the program to George Orwell’s book *1984*. In this novel, a dystopian society is run by a government that persecutes any form of individualism and independent thinking. This tyranny is overseen by “Big Brother” who is interested in power and a self-serving regulatory agenda. The producer who made this analogy also said,

“I think we would be better off without a FARM program because of where it looks like it is headed (to take complete control of all dairy farms). Next thing you know we will not be able to make ANY decisions on our own farm.”

The program's regulation over dairy producers was viewed unfavorably by numerous producers. One even asked the question, "Why is it that we need more and more regulation above our heads when we produce the best (milk) in the world?"

Producers on the Defense

A defense mechanism arises when an internal or external event occurs that violates the preferred view of an individual. In response, the individual must have a form of mechanism to process or defend oneself against the threatening implications of the event (Freud, 1936; Cramer, 1991), and in some cases, can be designed to protect self-esteem (Fenichel, 1945). "Dairy producers are on the defense," one participant said. They are on the defense due to pressing consumer demands and because they distrust the FARM program. Participants reiterated this defensiveness through anger, nostalgia, and pride. They also appeared on the defense as they continually justified themselves as dairy producers. Lack of producer input in the design and revisions of the FARM program also seemed to contribute to participants feeling defensive.

Anger

Anger was a reoccurring theme for producers who were on the defense. One producer said, "The FARM program needs to quit telling us what the f**k to do." Others stated, "The FARM program is a joke..." and "You can fix this program by scraping it." These participants were only three of many who expressed anger with the program. Others expressed similar anger and mentioned the importance they thought consumer education had. Two participants said,

"The FARM program is a complete waste of my resources...My dollars and effort would be better spent educating the consumer and combating these anti ag groups rather than playing catch-up after they slander us."

“The FARM program is a disaster and horrible waste of funding, and a burden to every operation it touches. Any farm that mistreated there [*sic*] animals has been out of business for thirty years. If you want to make a difference take the funding for this and use it for consumer education about agriculture”

Educating consumers appeared important to many participants. These are two examples:

“At first I thought the FARM program was a good idea. But instead of educating consumers about the sound reasons for tail docking, dehorning, hormone injections, tie stall barns, etc., the FARM program says, "oh, you're right PETA, that is inhumane!!!!!"

“I sincerely hope that there is a strong educational component that attempts to educate the uneducated public about farm practices, rather than just dictating that we must change our management to suit whatever buzzwords/topics at hand (think rBST, tail docking, organic vs conventional).”

Some of these producers appear to feel attacked and defensive because of consumer and activist demands. A producer highlights this with a beautiful simile,

“We (producers) feel like kindergarteners. I don't ask you to explain how you raise your kids or do your job, I trust you are doing it right. I would appreciate the same courtesy.”

Other participants expressed anger and defensiveness toward activist groups as outlined by one of the survey participants, “This program has turned into a joke, it's been taken over by the animal rights activist and should be called what it is, FARCE (Forcing Acceptance of Ridiculous Consumer Expectations).” Another described their frustration by saying, “Every time a PETA terrorist says jump, our industry says ‘yes dear how high’.”

Additional producers commented on this as well, “This program is ill conceived and a knee jerk reaction by NMPF to HSUS and others.”

Anger was extremely apparent through producer data, and for many reasons has impacted producers acting and feeling on the defense.

Nostalgia and Pride

Justification of an action or practice is an example of a defense mechanism. Many producers did this when speaking about the nostalgia and pride they had for dairy farming. Several indicated they knew what the right thing to do was and did not need to be told how to run their operations. They expressed offense towards anyone who would think otherwise. One producer said, “We milk cows because we love cows the fact that we produce a high quality product consistently should tell you the kind of operation we run we take care of our cows because it is the right thing to do NOT because some suit at (NMPF) thinks it will increase margins for Walmart.” Another said,

“We have always had a strong commitment to animal well-being, and have researched and implemented many cow-comfort and health ideas on our own. Being treated like naughty children and forced to prove it is distasteful.”

Others spoke to this point as well:

“We have always taken the best care of our cattle, have always used science and sound husbandry practices, we don't have to be told to do the right thing.”

“As a farm, we are progressive and try to always do what's right by the cows, not because a program told us to, but because it's the right thing to do.”

“I try to care for my animals in a responsible way. The program hasn't changed that. I participate in the program because the coop requires it. I plan to continue to improve farm management as I understand.”

“I do not need or plan to need someone else to tell me how to care for my animals. I did not need to make any changes to my operation to be in compliance because I have always taken the best care of my animals and work closely with my vet to do this.”

Some producers adamantly justified themselves by explaining their animal care practices:

“My family and I milk cows in a tiestall barn. Cows are on waterbeds and rubber filled mattresses. The barn is tunnel ventilated. SCC is below 100,000. We are for our cattle every day thru hail and high water. When will the program start standing up for the honest farmer?”

“Please allow farmers the right to make our own choices. I had cared for my animals as well as I do my own children. I go out at 11pm to check and stay with them all night if I need to. You can't put that in a manual that some FARM program evaluator can check off. I would proudly show you how I care for my animals.”

Pride was another recurring theme. One producer said, “We take great pride in our animals, everything we have is because of them.” Some producers who mentioned this pride also mentioned how it came from strong nostalgic roots of family:

“We love our small family farm and take a lot of pride in what we do. We have been able to raise our family of 3 boys and 4 girls here. The children love farm life and milking cows same as their parents do on a small scale family farm.”

Other producers mentioned length of farming as a form of pride and nostalgia, “We are the 5th generation on this farm and we take a lot of pride in treating our animals like pets.”

Another mentioned similar values by writing,

“My husband and I would not have been able to farm for 35 years if we did not know how to care for and did not care about our animals. We both have degrees in dairy

science and have strived to build a herd of quality animals and to produce quality milk.

Cow comfort is number one is our motto and it is not just a saying--it is something we live everyday.”

This form of nostalgia was interesting because it was defensive in nature. Others described their nostalgia without this defensive tone. One producer said,

“I would like to see it like it used to be in the old days. I can see where (this program) is alright for those that have extremely abused animals but for us to keep record and all that seems like you are putting your nose in someone else’s business... If we could just have animal care like our four [*sic*] fathers had it, and if you want animal care please keep it the way it used to be on how our four fathers had it.”

This producer explores the foundation of animal care and suggests the industry reverts to dairy in earlier days. Nostalgic views of dairying in the past are present with this producer. Other producers expressed the nostalgia of dairy farming as well, “A love for dairy farming and a genuine love for the animals causes me as a producer to do what is best for the animals.”

Another producer echoed this sentiment by describing, “I do my best to produce a high quality [*sic*] product and love (and care for) my cows while doing so.”

Input

One area of concern expressed by producers in this survey was described as not having enough input in the program. This was a need identified by many and was suggested to be caused in part by distrust of the governing body. One producer thought, “National Milk (NMPF) does not adequately represent the US dairy farmers, and we need more say in the program.” Others suggested the same:

“Dairy Farmers must have a voice with this program. National Milk (NMPF) does not adequately represent the US dairy farmers.”

“FARM is no longer what is best for the animal but what is best for political correctness.

When will the FARM Program start standing up for the farmer (and their animals)?”

Not only are these producers upset with NMPF representing them, but they suggest producers need a larger voice in the program.

One producer stated frustration with being unable to vote on who is included in the TWG and said, “We have never been able to vote for people on this FARM board, or committee.”

Another suggested,

“The tail docking issue was handled with zero input from actual producers. There is an established procedure for comments and hearings on changes to the program which were circumnavigated.”

Additional producers suggested they should have their “say” in the program. They understand that they are the individuals putting in the hard work for majority of the days during the year, and so should be part of the conversations when designing and revising the program. Some participants indicated that not having a say makes them feel like they need to protect themselves, which is a defense mechanism.

Producers are on the defense because they feel like their livelihood is being challenged. They expressed this defensiveness through anger, nostalgia, and pride. They also felt like they had to justify their practices and were defensive due to lack of producer input and more frequent and transparent communications within the program. One participant offered an interesting perspective saying, “The dairy industry needs to play offense rather than defense.” However, right now they are clearly playing defense.

Return on Investment

Many survey participants spoke to return on investment when revealing their perceptions of the FARM Animal Care Program. One group identified wanting an increase in milk price because of participating in the program, and the other viewed profitability as a direct measurement indicator of animal care. If they were profitable, they stated there would be no need for the program. Both groups indicated a type of return either desired or applied to their investment in animal care.

Of the producers who indicated that they wanted to be paid to participate in FARM, some said they wanted to be paid extra to make up for the additional costs associated with participating in the program. One producer said,

“More regulations, nothing costs us more and its ok to get no return. They tell me it doesn’t higher my cost when I ask them to pay.”

Another producer mentions the same concept,

“I believe, we the dairy farmer, do not see the increase revenue given the extra added expense of banning tail docking, eliminating rBST, and restricting medical options. We the dairy farmer have enough work on our shoulders to be told what to do if we are not promised a better milk price.”

Others indicated they wanted to be paid for participation because of the time it takes to be compliant with program standards,

“I feel strongly that farmers and their employees who must participate should be fairly compensated for their time to do so. As far as I can tell there is not a direct incentive to a farm that already practices good animal husbandry to go through an evaluation and additionally have to do trainings with employees etc. Maybe the co-ops and or

processors should offer a cash bonus for instance, as they use this a marketing/protection tool for their bottom lines.”

Some suggested that the program has made life more difficult for the people and cows on the dairy with no improvement in income. Some producers stated they believe that if their farm is profitable, their cows are being cared for properly. Producers stated this in different ways:

“We are [*sic*] dairymen need to practice animal care to be profitable. Animals that are not taken care of are not profitable.”

“If we weren't taking care of the animals in an appropriate way, we would not still be in business.”

“The producer is the loser if he/she doesn't treat animals well. Loss of condition = loss of production equals loss of animal welfare.”

“We along with all other dairy producers know that we have to take care of our animals to make it profitable.”

“Having been in farming all my life if I were not good at it or did not treat my livestock appropriately I would not still be in business.”

The perceived effect of productivity on animal care is interesting. Although this may be true to certain extent, it is not a sole reliable indicator of animal care.

Discussion and Recommendations

Based on our findings, there are a few areas of improvement for the program that need to be addressed. Overall, survey participants were not in favor of the program and those who provided qualitative feedback may have been more included to provide it due to frustration. Many of these participants indicated distrust in the program. Trust should be fostered between the FARM program and producers if future versions of the program are to be successful.

Producers play a key role in the successful implementation of the program, and their opinions are important for the program's success and sustainability.

Help from producers who view the program more favorably should be solicited for program promotion. Our data indicate that some dairy producers respect their peer's thoughts and perceptions regarding the program. Producers in favor of the program (identified in Chapter II) could help build rapport between producers who do not and program staff.

Evaluators can also help to build trust if equipped with clear messaging points to share with producers (e.g. describing the evaluation as providing proof points for customers and consumers rather than to make sure the producer is not breaking any rules). The message that by patrolling itself the dairy industry is trying to mitigate legislation and government regulation should be clearly described to producers.

Perceived program inequalities should be addressed by NMPF and the TWG. This could be addressed by reevaluating program standards to ensure that they are applicable to all dairy operations regardless of size or management type. Pertinent organic standards passed on a farm that is Certified Organic could count towards FARM program standards that are equivalent or exceed standard requirements. This could occur by either exempting questions (standards) from a farm if they are Certified Organic or creating a separate version of the program for organic farms.

More producer input was an area discussed by participants and was a clearly documented need for the program by producers. Adequate producer representation on the TWG could mitigate program inequalities and assist with increasing producer input. Producers know the inner-workings of their operations better than anyone else, and because of this their insight into program revision would be invaluable. Ensuring these producers represent the diverse population

of dairy farmers who are enrolled in the program could occur through reserving seats on the group for certain producer types (e.g. Upper Midwest seat, large producer seat, organic producer seat, female producer seat, etc.). Producers could not only be given more opportunities to serve on the TWG, but they could also be given the opportunity to vote on 4-5 representatives who serve on the group. This could assist in positioning producers to be less on the defense and more understanding of the program.

Current and upcoming program standards could also be re-evaluated with producer input. Focus groups, round tables, or panels could be used to accomplish this. In our survey alone, over 30 producers provided specific program standard suggestions alone. Some of these included:

- Using milk quality as a program standard as it is a good indicator of animal health
- Re-evaluation of procedures recommended for dehorning
- Evaluation of over-crowding of farms
- Establishing a process to change or remove program standards once they are in place (not just revision every three years by an elite group)
- Specific standards that address fly, dust, and manure management
- More veterinarian involvement in program implementation on individual dairy farms, like the Food Armor program where the veterinarian administers the program

Program communications should be improved to increase producer trust in the program and reduce chances of miscommunication between producers and program staff. Additionally, we recommend that the FARM Program create a mission statement with measurable outcomes/standards based on the mission. This would reduce the chance of producers perceiving the program as misrepresenting their stated program goals, and the program would be able to use measurable outcomes to prove this to producers.

Perhaps, a lack of communication reported by some participants could have caused a divide in stated program goals and the producers' perceived realities. One producer said, "Please let us know what you (the FARM program) do and before making decisions about farming and

talk with ALL farmers big and small.” Another suggested communication was lacking and NMPF should oversee sending said communications,

“We need more info on the program and any changes, proposed or otherwise. We get very little info from our processor, and if NMPF is who created this program, they should be responsible for sharing that info with us.”

Others indicated they liked the program, but still thought communications was an area with potential for improvement, “I believe this is a good program I also believe it needs more communication between farmers and processors...”

Trust can also be built between NMPF and producers by NMPF communicating to producers who serve on the TWG and as staff members. Producers indicated having issues with “outsiders” running the program; however, producers may be making a judgment call without having the facts or understanding the context. Dairy producers may be receptive to “outsiders” in NMPF and the TWG if they knew their background and credentials.

Communications with consumers also must become more effective. Producers comply with the FARM program with the intention that it will increase consumer confidence, which is stated in the program goals. Creating a food label could be considered by NMPF. Many of the producers who do not belong to the FARM program, are already enrolled in a program marketing their milk with a label. If consumers knew more about the program because of program advertisement such as this, there is also a chance producer trust in the program may increase too. Milk market improvement could also be measured if a label was utilized.

Completing research on how program standards impact operational profitability should be considered in an attempt to show producers how the program impacts their bottom line. If they perceive the program as hurting profitability, and these two tactics show improvement of

profitability, their opinion of the program could change. Producers may be more apt to view the program more favorably if they see the program as improving their profitability.

Lastly, nostalgia identified in the data has the potential to be utilized to better understand dairy producer perspectives and values. Nostalgia was used to tell meaningful stories by producers in the survey. If the FARM program adopted the same approach to tell their story, producers may be more likely to trust the program and view it with more favor. The FARM program has a great story to tell, it just needs to be told so producers can relate and understand why their role and input is so important.

Participants indicated appreciation for this survey, and giving them the opportunity to have their “voice heard.” One producer said, “(I) love this survey, thank you for putting this together. It is important producers can have their voice heard.” Another said, “Thank you for doing this survey.” Producer perceptions towards the program could be developed into more favorable views with knowledge gained from this study. Insights gleaned from this work can be used to infer recommendations for the new version of the program. Additionally, this gives producers a voice on their perceptions of the program.

Data collected from this research project can be used to influence the efficacy and impact of the program and guide future work. Future research should focus on consumer familiarity with the program, profitability measures associated with program standards, and value sets associated with dairy producers and how they effect on views on animal welfare. Implications of this project will benefit all dairy FARM stakeholders and should give individuals and groups interested in improving the producer experience with FARM the tools to do so.

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CHAPTER IV: A MIXED METHOD ANALYSIS OF DAIRY PRODUCER PERCEPTIONS OF THE FARMERS ASSURING RESPONSIBLE MANAGEMENT (FARM) ANIMAL CARE PROGRAM

Introduction

The United States dairy industry contributes \$33.5 billion to the US economy each year, and accounts for 9% of agricultural sales (USDA, 2014). The total number of dairy farms, producers, and cows is decreasing while average milk production, producer age, and herd size is increasing (USDA, 2012). The increase in production per cow and herd size and decrease in total farms, producers, and cows, is driven by economies of scale. The cost of production decreases with an increasing herd size (Wolf, 2003; Wilson, 2011). The shift in herd size has been responsible in part for public concern about the quality of care given to dairy farm animals.

Over the last few decades, animal welfare has received increased attention from consumers, agriculturalists, activist, and researchers alike. There has been increased interest from the public in cattle welfare (Wolf et al., 2016; Cardoso et al., 2016) and animal care and housing of milk producing cows (von Keyserlingk et al., 2009). Today's consumer is more concerned with where their food comes from and how it is raised, they support regulating farm animal care, and they are willing to pay more for food that is humanely raised (Grimshaw, 2014; Tonsor, 2011; Ellis et al., 2009). The average American consumer has had an influence over many large retailers and processors with interests aimed towards food safety and quality (Drake, 2007), and more recently has had influence over legislation regarding farm animal care (Dimitri et al., 2005; USDA-ERS, 2016)

The increased attention to welfare, especially by consumers, has resulted in the formation of auditing programs in the U.S. to allow livestock industries to police themselves (USDA, 2017). The National Milk Producers Federation (NMPF), the industry's policy and lobbying arm, and Dairy Management Inc. (DMI), the U.S. dairy promotion and checkoff association, agreed in early 2008 that developing a comprehensive, rigorous animal care program would be the best way to provide customers and consumers the assurance that they sought regarding the humane treatment of dairy cows (Meredith, 2017).

In 2009, the first version of the National Dairy Farmers Assuring Responsible Management (FARM) Animal Care Program was developed by a small group of individuals consisting of academics specializing in animal health, veterinarians, dairy cooperative staff, industry experts, and dairy farmers (Meredith, 2017). This group, slightly short of 20 individuals, would eventually be known as the Technical Writing Group (TWG). The TWG created three core elements to the program: a continuous improvement process to ensure the highest level of on-farm animal care by promoting best management practices (program standards), second party evaluations once every three years conducted by a trained evaluator, and integrity verification through third party evaluations. An aggregate random sample from all eligible farms is selected each year for third party evaluations.

The first version of the program was voluntary (Meredith, 2017), and the last two versions have become mandatory for producers who belong to co-ops and processors who participate in the program. The current version of the program (3.0) became effective January 1, 2017. There are 115 co-ops and processors from across the nation who are enrolled in the animal care program. The program is revised every third year by the TWG. The TWG utilizes the expertise of committee members and sound science to make program revisions. Producer input

on a nation-wide scale has not been evaluated to the author's knowledge. One to three dairy producers may serve on the TWG at one time and provide input during program design and revisions; however, they might not be an adequate representation of the diverse groups of dairy producers who participate in the program. Producers are the ones implementing the program standards, and for that reason their perspectives should be considered.

We created a dairy producer survey to: 1) assess level of comfort with the program and knowledge, 2) determine which information sources producers use, 3) determine who should be informing stakeholders about the program, 4) determine preferred training platforms, 5) assess producer internal and external experiences with the program, 6) assess perceived value of the program, and 7) determine the level of producer trust in the program. This research aimed to assess dairy producer knowledge, attitudes and perceptions about the FARM Animal Care program and inform future versions of the program with improvement opportunities.

Methodology

Participants and Setting

There are 2.1 million farmers in the United States, and 64,000 of those are dairy producers (USDA, 2012). The number of dairy producers has been decreasing each year, and from 2007-2012 this number decreased by 4.3% (USDA, 2012). An estimated 37,309 dairy producers participate in the FARM Animal Care Program (FARM Animal Care Program Database, 2017). The targeted population of dairy producers for the survey consisted of the farms enrolled in the program. Selection criteria for survey participants included: 1) be a primary dairy operator, 2) belong to a co-op or processor who participates in the FARM Animal Care Program, 3) milk 10 or more cows, and 4) operate a grade A dairy.

Survey Instrument and Experimental Design

With assistance from university faculty, dairy producers, cooperative staff, FARM evaluators, and FARM program staff, a 30-question survey was developed (Appendix II). The survey consisted of 20 content-based questions focused on stated objectives, and 10 demographic questions. Format of these questions included: Likert scale, binary, open-ended, and categorical. On Likert scale questions, participants were asked to select a number on a 1 to 5 scale (Likert Scale, 1932), with 1 being “strongly disagree”, 2 “disagree”, 3 “neutral”, 4 “agree”, and 5 being “strongly agree”. Nineteen of the content-based questions were quantitative, and the 20th question was open-ended, and it asked what the producer thought the main goal of the program was. If desired, producers could provide additional qualitative feedback either through providing text in comment boxes, writing on the back of the survey, or writing a separate letter and returning it with their survey.

The project was designed as a concurrent triangulation mixed method as explained in the project’s conceptual map (Appendix IV). This method consisted of collecting qualitative and quantitative data at the same time through a survey instrument. Data were analyzed separately and were then combined to analyze comparatively as a whole. Concurrent triangulation design is used to confirm, cross-validate and/or corroborate findings (Creswell and Clark, 2011). It is often used to overcome a weakness in one method with the strengths of another. It can also be useful in expanding quantitative data through collection of open-ended qualitative data.

Data Collection and Recruitment

The Institutional Review Board for Colorado State University reviewed and approved the survey and project methodology as exempt (Submission: 17-7113H). Upon project approval, the survey was disseminated in May of 2017 in two recruitment phases.

Phase one of recruitment consisted of sending an email to all dairy co-ops/processors who participate in the FARM program. The email asked the dairy co-ops and processors if they would like to participate in our survey. Completely randomized samples were drawn from the 42 co-ops and processors who volunteered to participate. Samples were stratified by co-ops and processors and were calculated based on the minimum sample size needed for a representative draw of the population ($n = 379$). A minimum threshold of 10 surveys were sent per co-op and processor. A total of 1,549 surveys were sent via postal mail, using a modified Dillman Method (Dillman et. al. 2009), which consisted of a pre-survey postcard, survey, and follow-up postcard. Each was sent in two-week intervals. Surveys were sent in envelopes that contained a survey, a signed cover letter, and a return-addressed envelope. Completion of the survey was voluntary and anonymous, with no incentive for participation. This phase of recruitment gleaned $n = 286$ surveys (18% response rate).

A 24% response rate was expected based on similar studies where response rate ranged from 14.5 – 28.7% (Papp et al., 2002; Heguy et al., 2016; Wolf et al., 2016; Voelz et al., 2017). The number of surveys sent in this phase of recruitment were calculated by expected response rate, minimum threshold per co-op and processor, and minimum sample size needed for a statistically significant representation of the population.

To maintain participant confidentiality, each survey was labeled with a unique code that corresponded to a name and address. The list of producer names and addresses was only used to determine who to send follow-up post cards to and was not referenced after final survey distribution. The survey and follow-up postcard had a link to the survey online. Although in a previous Kentucky dairy producer survey, 62% of participants did not think internet was an effective information delivery method (Russell and Bewley, 2013), we provided this survey in an

online format to target the younger and more technology-adapted dairy producers (the other 38% of producers).

To recruit more participants to reach the minimum sample needed for the population, and to gather a better representation based on state, a second phase of recruitment was completed. In this phase of recruitment, survey invitations were extended to all producers associated with collaborating dairy co-ops and processors via an email blast. This strategy in conjunction with advertisement in a lay press dairy producer magazine and producers sharing information with their colleagues allowed us to reach our minimum sample size. Phase two of recruitment gleaned $n = 325$ surveys.

Data Analysis

Quantitative data were entered into an excel spreadsheet and analyzed using R statistical software (R Core Team, 2018). Surveys were categorized by region. Table 4.1 lists states included in each region. Region was determined by FARM program enrollment per state; this allowed each region to have similar amounts of program enrollees.

Table 4.1. States broken down into regions based on enrollees per state

| Region | |
|---------------------|---|
| Midwest (MW) | IA, SD, IN, OH, NE, MI, IL, MO |
| Northeast (NE) | NY, VT, MA, CT, PA, DE, ME, NH, NJ, RI |
| Southeast (SE) | FL, KY, MD, WV, NC, GA, TN, VA, MS, LA, AR, AL, SC, Washington D.C. |
| Southwest (SW) | NM, TX, AZ, CO, KS, OK |
| Upper Midwest (UMW) | MN, WI, ND |
| West (W) | OR, CA, ID, WA, NV, MT, WY, UT |

Principal components analysis (PCA) was used to find linear combinations of the given variables for each PCA to adequately describe most of the variation in the data. PCAs are used when multiple questions are highly correlated. This accounts for more of the variation in the data

in comparison to using the questions separately. Each PCA contained a group of correlated questions pertaining to perception of knowledge, internal experience, external experience, and value.

Multiple regression models were used to determine the relationships between PCAs and the different demographics. Tukey's test of multiple comparisons, f-tests, and one-way ANOVAs were used to determine if perceptions differed based on demographics. Significance level (α) was set at 0.05, which indicated we accepted a 5% risk of concluding that there were not differences in demographics between perceptions, when in fact there were. This significance value was used for all tests with an exception to f-tests where a family-wise error rate was set to 0.10. Multicollinearity was not found when testing was performed. Mean responses were calculated for Likert scale data and the following numerical values were assigned to each response: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

Qualitative data analysis was driven by the following question: "What are the overarching perceptions dairy producers have of the FARM Animal Care Program?" Data were analyzed as two separate data sets: open-ended data and additional feedback data. To systematically explore the complexity of these data sets, we utilized thematic analysis. With thematic analysis, the researcher focuses on searching through the data for themes and patterns (Glesne, 2010 pp. 187). These themes are created by first developing a set of codes. Codes were inductively interpreted from the data by the primary researcher. This process was conducted over a period of a three months. A final set of codes were developed and described in a code key for each dataset (Appendix III). Code overlap occurred between the data sets.

Additional researchers participated in the analysis to improve trustworthiness through triangulation of researchers. Coding took place in four sessions by the primary researcher, and

because of this, memos served as an advantageous way to record analysis progression. This allowed the primary researcher to continue where she had concluded her last session with ease. Suggested themes were recorded in memos, and the memos were used when the research team met to debrief on coding progression.

After the primary researcher finished coding, the code keys were distributed to two other members of the research team. Each researcher reviewed 2/3 of the data each. This ensured each 1/3 of data was coded by at least two researchers. The team met and communicated via email regularly to discuss and revise the codes as needed throughout the coding process. Percent agreement of codes was calculated at 79.6%.

The research team met after coding and discussed the formation of themes based on codes. Five main themes emerged from the data: *distrust of program*, *producers on the defense*, *nostalgia*, *return on investment*, and *anger*.

Trustworthiness

The primary researcher believes concepts are socially constructed. Thus, procedures designed to enhance trustworthiness were used in this study. In Creswell (1998, pp 201-203) eight procedures are mentioned that can be utilized to enhance trustworthiness in qualitative research: prolonged engagement/observation, triangulation, peer review/debriefing, negative case analysis, stating researcher bias/positionality, member checking, rich description/ audit trails, external audits. In this study, we used four of the eight procedures: triangulation, debriefing, clarification of researcher bias (positionality), and audit trails.

Triangulation of researchers analyzing data was used to cross-validate findings and crystalize codes and themes used during thematic analysis. Inter-rater reliability (percent agreement) was calculated to contribute to this as well. Triangulation between data analyses was

also used. Quantitative and qualitative datasets were analyzed separately, and then combined to be analyzed holistically (as shown in this chapter). Other analytical research methods (ethnographic, narrative, and poetic analyses) were also explored briefly after thematic analysis by the primary researcher to analyze data in more depth. Qualitative results in this chapter focus only on results found from thematic analysis, however. Debriefing was used with the research team throughout data collection and analysis and audit trails were created by the primary researcher. The use of memos, a research journal, and emails ensured an audit trail was being created. Positionality was also acknowledged at the beginning of the study.

Positionality

Positionality as defined by Hay (2005), is the researcher's social, locational, and ideological placement relative to the research project or to other participants in it. Positionality has been chosen to be addressed up front to enhance trustworthiness. The primary researcher is considered someone who is an insider to the dairy industry as she has studied and worked on dairies the last eight years of her schooling. These dairies have ranged in size, type, and geographical location. The dairies resided primarily in the Midwest, West, and Upper Midwest regions and some were conventional dairies while others were niche' market oriented. She held positions on these dairies as an artificial insemination (AI) technician, milk harvester, and area manager. She has also held internships with educational and promotional groups that serve the dairy industry and has studied dairy abroad as part of her schooling.

International experience working on dairies specifically in Vietnam and New Zealand have especially shaped the primary researcher's views on the U.S. dairy system. While abroad, she learned about pasture-based systems and organic-based dairy farming. These are both non-traditional ways to dairy in the U.S., and for that reason the primary researcher had a shift in her

agrarian ideology (ideology surrounding agriculture) upon returning from her education abroad. Her classical agrarian values of conservatism and land-ownership were two of many that shifted.

Through these experiences she has developed an affinity to the industry and this has affected her positionality. She is invested in assisting dairy producers to create the best possible circumstances for animal wellbeing, and because of this, conclusions may have led her to support her working hypotheses. To address this, she was continuously reflexive and addressed her subjectivity in a research journal during the study's progress.

The researcher's philosophical position as a foundation for research practices and methodological strategies was also considered to ground her research (Shannon-Baker, 2016). Acknowledging this gives readers a perspective of the researcher's ontology (ideas of reality) and epistemology (how we gain knowledge). The researcher considers herself an interpretivist meaning, she aims to understand her research through a reality that is socially constructed. This approach is characterized in Figure 4.1 taken from Glesne (2010).

INTERPRETIVIST APPROACH

Assumptions

- Reality is socially constructed
- Variables are complex, interwoven, and difficult to measure

Research Purposes

- Contextualization
- Understanding
- Interpretation

Research Approach

- May result in hypotheses and theory
- Researcher as instrument
- Naturalistic
- Inductive
- Searches for patterns
- Seeks pluralism, complexity
- Makes minor use of numerical indices
- Descriptive write-up

Researcher Role

- Personal involvement
- Empathic understanding

Figure 4.1. Characteristics of an interpretivist approach

The conceptual map of this project's research design can be seen in Appendix IV.

Included in this map is the theoretical framework, project methodology, design, and interpretation.

Findings

A total of $N = 611$ surveys were returned via mail ($n = 199$) and online ($n = 412$). Thirty were omitted because participants were not the primary operators of the dairy farms and an additional 94 were omitted because less than 30% of the survey was completed. These surveys were omitted because no content-based questions were answered, only demographic ones were completed. This left $n = 487$ surveys for subsequent analyses: 199 were collected via hard copy and 288 were collected online, 189 were recruited through phase one recruitment and 298 were

recruited through phase two. Of 487 survey participants, $n = 190$ (39%) provided additional qualitative feedback and $n = 414$ (85%) answered the open-ended question.

Demographics

Dairy producers in this study represented 40 states and the District of Columbia. Number of enrolled farms in the FARM program included in the National Milk Producers Federation (NMPF) database were compared to number of survey participants by state (Figure 4.2). The color scale describes the number of farms enrolled in the FARM database, and the dots represent the number of survey participants per state. Map results indicate the survey sample was a fair representation of the population as the states with greater numbers of farms enrolled in the program (e.g. Minnesota, Wisconsin, Pennsylvania), had more survey participants. Similarly, states with fewer farms enrolled in the program (e.g. Washington, Kansas, North Dakota) had lesser survey participant counts. There were no surveys received from Utah, Wyoming, Montana, Nevada, Oklahoma, Arkansas, Alabama, South Carolina, and Rhode Island. Hawaii and Alaska have no dairy producers who participate in the FARM program, and were not included in the map.

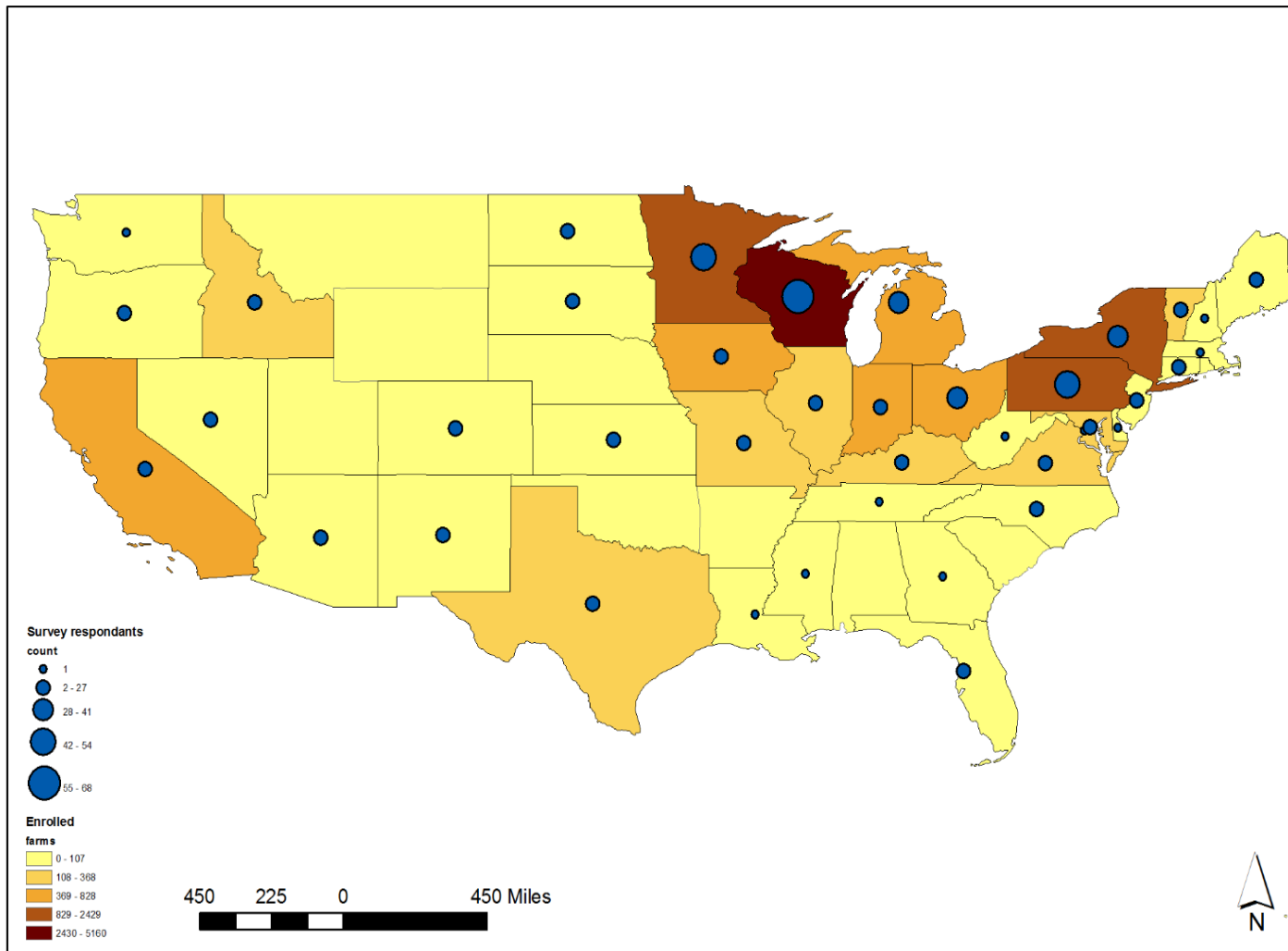


Figure 4.2. Number of farms enrolled in FARM per state compared to number of survey participants per state.

Participating dairy producers represented 57 co-ops and processors from across the nation. The targeted population of dairy producers for this survey were producers who are enrolled in the FARM program. Census data represents all dairy producers in the U.S. For this reason, comparisons of survey and census data could have discrepancies.

Gender, age, and herd size was divided into brackets based on USDA defined bracket categories and were compared to USDA reported statistics (Table 4.2). Eighty-three percent of survey participants were male while 17% were female (n = 482). In the U.S. Agriculture Census (2012), 86% of dairy producers were reported as male and 14% female.

Forty-two percent of participants were < 45 years old, 51% were between ages 45 to 64, and 7% were ≥ 65 years old (n = 477). Comparatively, the census reported 28% of dairy producers being < 45, 57% between ages 45 to 64, and 15% being ≥ 65 years old (USDA, 2012).

Table 4.2. Demographic results from the survey compared to Census of Agriculture statistics

| Demographic | Population Sample % | USDA Census of Agriculture, 2012 % |
|-------------|------------------------|--|
| Gender | N = 482 ¹ | |
| Male | 83 | 86 |
| Female | 17 | 14 |
| Age | N = 477 ¹ | |
| < 45 | 42 | 28 |
| 45-64 | 51 | 57 |
| ≥ 65 | 7 | 15 |
| Herd Size | N = 479 ¹ | |
| 1-29 | 4.8 | 32.4 |
| 30-49 | 10.2 | 16.7 |
| 50-99 | 28.2 | 25 |
| 100-199 | 20 | 13.6 |
| 200-499 | 13.4 | 6.6 |
| 500-999 | 8.4 | 2.7 |
| 1000-1999 | 7.1 | 1.6 |
| 2000+ | 7.9 | 1.3 |

¹Total survey participants who answered demographic question

Income was divided into six brackets, also determined by USDA bracket categories. Roughly one-third of participants reported earning < \$50,000 (36.6%), 27.5% reported earning \$50,000-100,000, 13.4% earned \$100,000-250,000, 7.0% earned \$250,000-500,000, 5.7% earned \$500,000-\$1,000,000 and 9.7% reported earning > \$1,000,000 (n = 454).

Level of formal education was reported among participants in six brackets: elementary/primary school (7.8%), middle school (8.7%), high school (32.4%), technical/trade school (21.2%), bachelor's degree (24.2%), and post graduate (5.5%) (n = 472).

Qualitative Themes

Thematic analysis revealed that dairy producers perceive the FARM Animal Care Program from three overarching approaches: distrust of program, producers on the defense, and return on investment. Within these three areas there were five main themes: *producers on the defense, distrust of program, efficiency, anger, and nostalgia*. *Distrust of program* was the most frequent theme, being coded by the primary researcher 416 times total in the data sets (Table 4.3). This was followed by *producers on the defense* being coded 398 times, and *anger* being coded 345 times, and *return on investment* being coded 283 times. *Nostalgia* was coded 187 times. Some of the themes had overlapping codes and concepts. Because of this, data from an individual could have been assigned more than one theme.

Table 4.3. Coding frequencies of themes identified through thematic analysis

| Theme occurrence ¹ | Theme | | | | |
|----------------------------------|---------------------|----------------------|-------|-----------|--------------------------|
| | Distrust of Program | Return on Investment | Anger | Nostalgia | Producers on the Defense |
| | 416 | 283 | 345 | 187 | 398 |

¹Theme occurrences calculated based on code frequencies

Knowledge and Communication

Principal components analysis was completed using five questions that assessed the producers perceived knowledge with the FARM Animal Care Program. After completing the analysis, we found our first principal component for knowledge (PCK) accounted for 60.3% of all the variance in the data. *F*-tests with a family-wise error rate (FEW) of $\alpha = 0.10$ were conducted to compare the effect of PCK on gender, age, herd size, level of formal education, and region. There was a significant effect of PCK on herd size and level of formal education ($P = 0.0044$ and $P = 0.0411$, respectively). A greater level of formal education and a larger herd size, generated a greater PCK value, meaning that producers with more cows or more years of formal education felt more knowledgeable about the program.

Although region was not statistically significant in terms of PCK, we found significant differences between regions. Tukey's procedure revealed that participants in the Northeast (NE) region were different from the those in the Midwest (MW) region ($P = 0.0298$), with the NE region appearing more knowledgeable about the program. Additionally, the NE region was different from the Southeast (SE) region ($P = 0.0726$), with the NE region appearing more knowledgeable about the program.

The overall mean PCK score for someone who was of mean age (47 years), mean level of formal education (one year of post-high school education), and had a mean herd size (170 cows), averaged over gender and region, was estimated to be 0.0219 (CI: -0.1524, 0.1962). A participant would be absolutely Neutral on perceived knowledge if $PCK = -0.6773$, and because the confidence interval calculated above does not contain Neutrality, the average participant felt knowledgeable about the FARM program.

Although the average participant felt knowledgeable about the program, 8.5% of participants did not think they were knowledgeable and 17.9% felt neutral. Efforts could be focused on identifying producers who do not feel knowledgeable and offering them training. Of 456 respondents, 41.0% indicated that they would attend a training on FARM if available. When asked to select their most preferred training format, participants indicated the most preferred method would be a packet of materials mailed/delivered to their farm (28.3%). Previous research has demonstrated that merely providing printed materials will not consistently impact knowledge and practice (Freemantle et al., 2005). Dairy producers are extremely busy, and because of this many cannot leave the farm for extended periods of time. This could contribute to why this format was identified as the most preferred by participants.

Other formats participants preferred included: on-farm training (25.7%), a regional workshop for producers (22.8%), a national conference (12.0%) and lastly, an online training/webinar (11.3%). Delivering a packet of materials to the farm is low cost and low input in comparison to hosting a meeting, workshop or delivering individual on-farm trainings. Meetings, workshops, and individualized trainings require multiple individuals to organize, facilitate, and effectively deliver the material. Mailing printed materials would be an easier way for co-ops, processors or FARM staff to provide dairy producers with information on the program as it is updated and revised, however it may not be as effective in comparison to other training formats. The least preferred method of training by dairy producers was in an online format. Similar findings have been shown in other dairy producer surveys where over half of participants did not think the internet was an effective information delivery method (Russell and Bewley, 2013).

Program communications was identified by participants as an area for improvement in the program. Utilization of the training methods mentioned above, could assist with this. Lack of communication was illustrated when one producer said, “Please let us know what you (the FARM program) do and before making decisions about farming and talk with ALL farmers big and small.” Another said, “I believe this is a good program I also believe it needs more communication between farmers and processors...”

Some agreed that the program needed improved communications and suggested NMPF should oversee sending said communications,

“We need more info on the program and any changes, proposed or otherwise. We get very little info from our processor, and if NMPF is who created this program, they should be responsible for sharing that info with us.”

This was contradictory however, to who participants indicated they thought should be responsible for informing stakeholders about the program. Co-ops and processors were the top picked choice when participants were asked who they should be responsible for informing stakeholders about FARM (37.9%). This was followed by: promotional groups/producer associations (21.5%), FARM program staff/evaluators (14.3%), and dairy producers (11.8%). It was surprising that only 14.3% of participants indicated FARM program evaluators and staff should oversee educating stakeholders about the program. These findings indicate that co-ops and processors might be seen as more resourceful and knowledgeable than FARM staff, hence more apt to deliver FARM related information to dairy producers.

Program Experiences

A series of six questions were asked to understand participants’ perceptions regarding their experiences with the FARM Animal Care Program. Over half of participants reported

having a good working relationship with their evaluator (59.5%) and thought a pre-evaluation meeting with their evaluator helped them understand what was going to happen during their evaluation (50.1%). Almost two thirds (65.1%) of participants indicated their FARM evaluator was qualified to do FARM evaluations and 70.4% of participants thought their past evaluations were handled correctly. Relationships with FARM evaluators and evaluations were perceived positively based on these results.

When participants were asked if they thought dairy producers should have more opportunities for input in the design and revision of the program, 83.8% agreed they should. Less than half of participants (41.5%) indicated that they trust the TWG will make informed decisions when updating the program. Over one-third (37.1%) of participants thought third-party evaluations should not be used. Experiences associated with the program and TWG were not viewed as favorable by participants.

Two principal component analyses were completed on questions related to perceived experience. The first principal component “internal experience” (PCI) captured participants experiences with their evaluators and evaluations. The second principal component “external experience” (PCE) was comprised of perceptions of the TWG and the FARM program in general.

One-way ANOVAs were conducted to compare the effect of PCI on demographics in gender, age, herd size, level of formal education, region, and if the participant had a FARM evaluation in the past. There was a significant effect of PCI on whether the participant had a FARM evaluation in the past ($P = 0.0009$). Participants who reported having had an evaluation had a significantly more favorable internal experience with the program.

The mean PCI score for the average participant with the mean age (47 years), mean level of formal education (one year of post-high school education), and has a mean herd size (170 cows), averaged over gender and region, was estimated to be -0.1629 (CI: -0.3746, 0.0488). This confidence interval does not capture absolute Neutrality (-1.0470). This indicates the average participant has had a favorable internal experience with the FARM program and participants perceive their experiences with evaluations and their evaluators positively. From the perspective of the participants, FARM evaluators are doing a good job fostering relationships with participants, and are handling FARM evaluations correctly. One participant said, “We had an evaluator from our coop [*sic*] come out and do an evaluation, they did a great job.”

One-way ANOVAs were also conducted to compare the effect of PCE on demographics in gender, age, herd size, level of formal education, region, and if the participant had a FARM evaluation in the past. Results indicated PCE had a significant effect on gender ($P = 0.0388$). Both males and females reported an unfavorable external experience with the FARM program, with males having a more negative experience.

The mean PCE score for someone who is of mean age (47 years), mean level of formal education (one year of post-high school education), and has a mean herd size (170 cows), averaged over gender and region, was estimated to be 0.2908 (CI: 0.0772, 0.5044). The confidence interval does not capture absolute Neutrality (1.2796), meaning the average participant reported having an unfavorable external experience with the FARM program. This was seen in qualitative data as well. Participants expressed anger and distrust with the program. Distrust was addressed when one producer said,

“It's embarrassing (the program). I speak for many producers. We've held meetings to discuss how awful this program is and our options to deal with it.”

It is possible that producers feel at a loss with their distrust in the program. This participant suggested that some producer groups are relaying on one another to meet and discuss coping mechanisms. Other broad claims regarding distrust included:

“I could not think of a more offensive [*sic*] and condescending program than the FARM program and if it was not mandatory I would have no part in it.”

“The FARM program is a disgrace to the dairy industry.”

Anger was a reoccurring theme much like distrust for producers who were on the defense. One producer said, “The FARM program needs to quit telling us what the f**k to do.” Others stated, “The FARM program is a joke...” and “You can fix this program by scraping it.” These participants were only three of many who expressed anger with the program. Some producers indicated feeling attacked, angry, and defensive because of consumer and activist demands. One producer highlighted this with a simile,

“We (producers) feel like kindergarteners. I don't ask you to explain how you raise your kids or do your job, I trust you are doing it right. I would appreciate the same courtesy.”

Many of the angry qualitative responses from the survey highlighted participants distrust in the program, and negative external experiences. One code identified within these sets of responses was a concern for a lack of producer input in the program.

Input

When participants were asked if they thought dairy producers should have more opportunities for input in the design and revision of the program, 83.8% agreed they should. This was also seen through qualitative data as a need identified by many. One producer said, “National Milk (NMPF) does not adequately represent the US dairy farmers, and we need more say in the program.” Others suggested the same:

“Dairy Farmers must have a voice with this program. National Milk (NMPF) does not adequately represent the US dairy farmers.”

“FARM is no longer what is best for the animal but what is best for political correctness. When will the FARM Program start standing up for the farmer (and their animals)?”

Not only are these producers upset with NMPF representing them, but they suggest producers need a larger voice in the program. One producer claimed,

“The tail docking issue was handled with zero input from actual producers. There is an established procedure for comments and hearings on changes to the program which were circumnavigated.”

Less than half of participants (41.5%) indicated that they trust the TWG will make informed decisions when updating the program, and many producers stated frustration with this though qualitative data. One producer said, “We have never been able to vote for people on this FARM board, or committee (TWG).” Another added, “These FARM rules are being encouraged by self-serving veterinarians, and coop leaders, and processors.”

This introduced the idea of ‘outsiders’ running the FARM program. Many participants attributed program distrust to the idea that “outsiders” were running the program and controlling how they run their operations. Outsiders were described as different stakeholder groups by producers; some stated they were office dwellers, others referred to program staff, and some referred to the technical writing group specifically. One producer said, “Maybe everyone making the rules should actually milk cows for a year before telling us what to do.” Another said, “It's great when people who have no immediate connection with dairy cattle and everyday farming are allowed to dictate and tell us how to do our job.”

Other producers emphasized the same concern by stating:

“We should not be told by nondairy farmers how to run our business!”

“We are being told what to do by people that may have never even been on a farm!”

Other participants felt people “outside” of the dairy industry were creating the FARM program. One participant alluded to this when they wrote, “Why do we need someone else that is standing on the outside of the box and pointing at us saying, you need to do this or that?”

Another producer claimed, “It's just a game to play the rules established by people who have no idea what it takes to care for animals day in day out year after year.”

A few producers identified the TWG as outsiders, “The committee (technical writing group) did a very poor job at looking at the whole picture when creating the program.” Many of the producers who mentioned outsiders such as the TWG or non-dairy individuals running the program, also mentioned a loss of trust in the program because of this.

Value and Inequalities

A series of four questions were asked to better understand participants’ perceptions regarding value of the FARM Animal Care Program. Almost half of participants (47.4%) did not think the program was beneficial to their cows’ health and wellbeing and 62.3% did not think the program improved their farm’s profitability. Participants were asked if they thought the program addressed consumer hot topics in the dairy industry, and 46.4% indicated that it did. This was the highest regarded value statement in this set of questions.

A principal component for value (PCV) was constructed from the four value questions mentioned above. One-way ANOVAs were conducted to compare the effect of PCV on the demographics of gender, age, herd size, level of formal education, and region. There was a significant effect of PCV on gender, age, herd size, and region ($P = 0.0179$; 0.0333 ; 0.0240 ; and 0.0361 , respectively). Females had a neutral impression of the value of the FARM program, and

males had an unfavorable one. The older the participant and the larger herd size the participant reported, the more value the participant assigned to the program.

Tukey's procedure revealed tendencies between PCV and region (Figure 4.3). The Northeast, Southwest, and West regions' confidence intervals captured the line of absolute Neutrality, suggesting the regions perceive value of the program neutrally. Comparatively, the Midwest, Southeast, and Upper Midwest regions' confidence intervals did not capture the line of absolute Neutrality and reside below this line. This suggest these regions have an unfavorable opinion of the value of the FARM program.

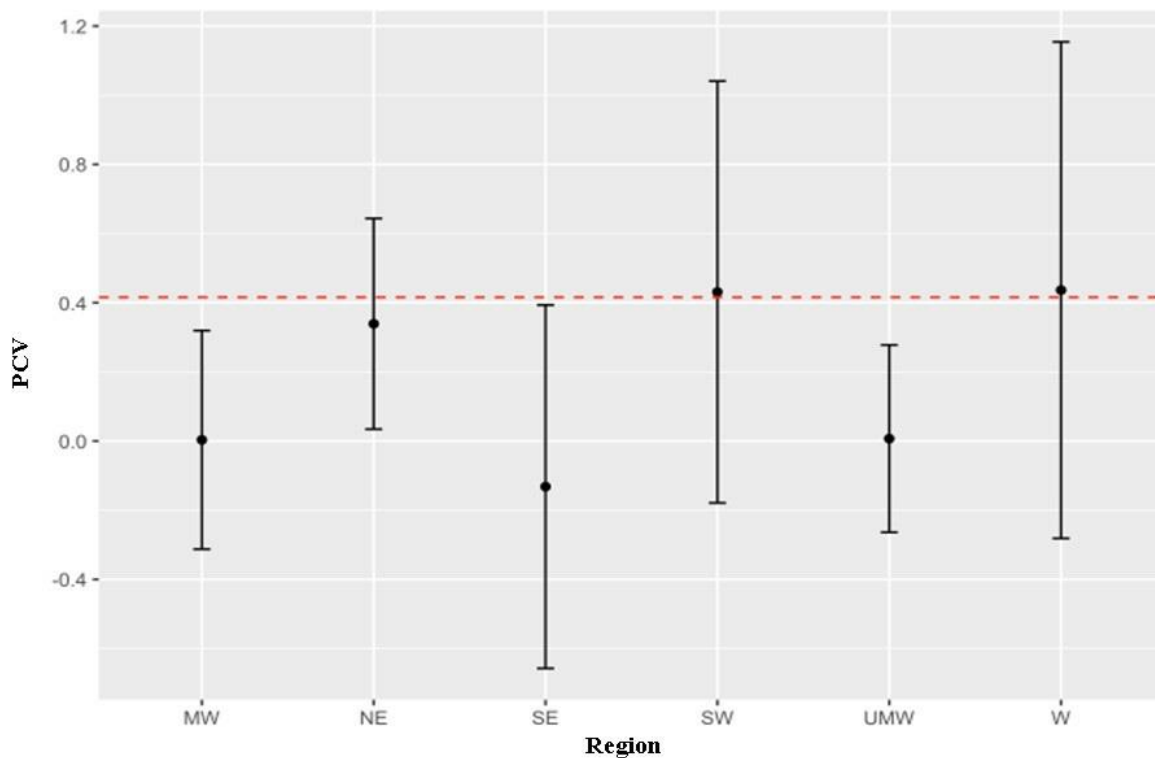


Figure 4.3. Principal component for value (PCV) by region. PCV values are represented as least squared means which are adjusted mean estimates based on the model (black dots). The red line represents Neutrality.

Overall, 45.6% of participants did not think the program was valuable to their operation. Many producers indicated they didn't see value due to inequalities in the program. Perceived

inequalities of the program regarding operation size and type were discussed by some producers. One producer stated, “I feel the FARM program is forcing certain management techniques on us that are not beneficial to every operation.” An organic producer stated, “This program is redundant and foolish on organic family farms.” Many of the standards farms are required to follow for organic certification are more stringent and detailed in comparison to the FARM program standards. This producer also stated that their operation “goes above and beyond FARM program requirements.” This point is further emphasized by another producer who stated, “We far exceed the requirements of FARM with our organic certification which FARM ignores.”

Participants also expressed concern with program standards pertaining to large and small operations. One producer said,

“I personally think as a small family farm I do not think FARM is even applicable to my farm. I also believe small family farms should be excluded from FARM. FARM is irrelevant for a small operation.”

This outlines potential discrepancies between large and small operations. This point is further explained by other producers:

“Protocols and written documentation required are a waste of time for us as a family farm.”

“(The) FARM program is a lot more beneficial to large farms than[sic] small ones. Consumer doesn't have a problem with most small operations, but large ones. Even though animal welfare may be just as good in large operations.”

“Most of the questions (on an evaluation) are geared towards larger farms. There are a lot of questions that make no sense (to smaller farms).”

Many of the smaller producers felt the program guidelines were not representative nor applicable in some instances to their operation. One example of a program inequality as pointed out by producers on the survey concerns training protocols. On both large and small operations, training protocols must be written and available to evaluators during evaluations. In many instances, the small family farm will not hire additional labor and instead rely solely on family to carry out day-to-day operations. Many of these family members have been working on the farm their whole life. To the point described by some of the producers, the written training protocols required by FARM will most likely never be looked at or used on smaller operations.

Other producers indicated unfavorable views with how the program represents smaller operations and concern for the FARM program helping to put smaller operations out of business. One producer said,

“Consumers don't like mega-dairies. Regardless of how well they are managed, they are a huge liability for the industry. That needs (to be) addressed by FARM as they won't have public credibility if mega dairies are supported and small herds put out of business.” More support for small farms is suggested by this producer as well as a concern for what the public will think if only large farms are left. Another producer suggested that the program will directly cause this,

“You are why there will only be huge farms someday. People want to see our cows on pasture by the old red barn, not row after row of huge cow barns. Fix this.”

Others added, “It seems like the FARM program wants to put small farmer out of industry,” and one producer even claimed, “It seems all you (the program) care about is big farms.” Based on these responses, there is an indication that dairy producers who operate smaller

herds do not feel supported by the program, with some even believing that the program may assist in putting them out of business.

Conclusion and Implications

The findings of this study demonstrate how some demographic differences among dairy producers affect perceived knowledge, value, and experience with the FARM Animal Care Program. Findings also identify areas of improvement for the program that should be addressed. Overall, survey participants were not in favor of the program. Many of these participants indicated unfavorable value and distrust in the program. Trust should be fostered between the FARM program and producers if future versions of the program are to be successful in engaging this important stakeholder group. Producers play a key role in the successful implementation of the program, and their opinions are important for the program's success and sustainability.

Help from producers who view the program more valuable and favorably should be solicited for program promotion. Our data indicate that some dairy producers respect their peer's thoughts and perceptions regarding the program. Producers in favor of the program could help build rapport between producers who do not and program staff. Older producers had a more favorable perceived value of the program, for this reason they could serve as spokespeople for program promotion. Evaluators could also help to build trust if equipped with clear messaging points to share with producers.

Perceived program inequalities should be addressed by NMPF and the TWG. This could be addressed either by creating two program versions (e.g. version 3A for organic farms and version 3B for conventional ones), or by creating standards that are applicable on every dairy operation regardless of size or management type. Pertinent organic standards passed on a farm that is Certified Organic should count towards FARM program standards that are equivalent or

exceed standard requirements. This could occur by either exempting questions (standards) from a farm if they are Certified Organic or creating a separate version of the program for organic farms.

More producer input was an area discussed by participants and was a clearly documented need for the program by producers. Adequate producer representation on the TWG could mitigate program inequalities and assist with increasing producer input. Producers know the inner-workings of their operations better than anyone else, and because of this their insight into program revision would be invaluable. Ensuring these producers represent the diverse population of dairy farmers who are enrolled in the program could occur through reserving seats on the group for certain producer types (e.g. Upper Midwest seat, large producer seat, organic producer seat, female producer seat, etc.). Producers could not only be given more opportunities to serve on the TWG, but they could also be given the opportunity to vote on 4-5 representatives who serve on the group. This could assist in positioning producers to be less on the defense and more understanding of the program.

Current and upcoming program standards could also be re-evaluated with producer input. Focus groups, round tables, or panels could be used to accomplish this. Program communications should be improved to increase producer trust and perceptions of program value. This could be in the form of trainings or other methods identified by participants in the survey. Communicating who serves in the TWG and their background may also increase producer trust in the program.

This study provides dairy industry professionals with information about how dairy producers perceive the FARM Animal Care Program. Dairy professionals can use this information to target producer groups based on demographics to build knowledge, potentially utilize evaluators and older dairy producers as spokespeople for the program, and build trust and

perceived value of the program through including more producer input in the design and revision of future versions of the FARM Animal Care Program.

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CHAPTER V: CASE STUDIES ON STAKEHOLDER PERCEPTIONS OF THE FARMERS ASSURING RESPONSIBLE MANAGEMENT (FARM) ANIMAL CARE PROGRAM

Introduction

The United States dairy industry contributes \$33.5 billion to the US economy each year, and accounts for 9% of agricultural sales (USDA, 2014). The total number of dairy farms, producers, and cows is decreasing while average milk production, producer age, and herd size is increasing (USDA, 2012). The increase in production per cow and herd size and decrease in total farms, producers, and cows, is driven by economies of scale. The cost of production decreases with an increasing herd size (Wolf, 2003; Wilson, 2011). The shift in herd size has been responsible in part for public concern about the quality of care given to dairy farm animals.

Over the last few decades, animal welfare has received increased attention from consumers, companies, agriculturalists, activist, and researchers alike. There has been increased interest from the public in cattle welfare (Wolf et al., 2016; Cardoso et al., 2016) and animal care and housing of milk producing cows (von Keyserlingk et al., 2009). Today's consumer is more concerned with where their food comes from and how it is raised, they support regulating farm animal care, and they are willing to pay more for food that is humanely raised (Grimshaw, 2014; Tonsor, 2011; Ellis et al., 2009). The average American consumer has had an influence over many large retailers and processors with interests aimed towards food safety and quality (Drake, 2007), and more recently has had influence over legislation regarding farm animal care (Dimitri et al., 2005; USDA-ERS, 2016)

The increased attention to welfare, especially by consumers, has resulted in the formation of auditing programs in the U.S. to allow livestock industries to police themselves (USDA,

2017). The National Milk Producers Federation (NMPF), the industry's policy and lobbying arm, and Dairy Management Inc. (DMI), the U.S. dairy promotion and checkoff association, agreed in early 2008 that developing a comprehensive, rigorous animal care program would be the best way to provide customers and consumers the assurance that they sought regarding the humane treatment of dairy cows (Meredith, 2017).

In 2009, the first version of the National Dairy Farmers Assuring Responsible Management (FARM) Animal Care Program was developed by a small group of individuals consisting of academics specializing in animal health, veterinarians, dairy cooperative staff, industry experts, and dairy farmers (Meredith, 2017). This group, slightly short of 20 individuals, would eventually be known as the Technical Writing Group (TWG). The TWG created three core elements to the program: a continuous improvement process to ensure the highest level of on-farm animal care by promoting best management practices (program standards), second party evaluations once every three years conducted by a trained evaluator, and integrity verification through third party evaluations. An aggregate random sample from all eligible farms is selected each year for third party evaluations.

The first version of the program was voluntary (Meredith, 2017), and the last two versions have become mandatory for producers who belong to co-ops and processors who participate in the program. The current version of the program (3.0) became effective January 1, 2017. The program is revised every third year by the TWG. The TWG utilizes the expertise of committee members and sound science to make program revisions.

There are 115 co-ops and processors from across the nation who are enrolled in the animal care program. Co-op and processor groups are the entities who buy milk from the dairy farmer. These co-ops and processors also make up part of the FARM customer group. The

FARM customer group consists of companies who market and sell products processed from milk of FARM certified dairy farms.

Second- party evaluations are completed by a certified evaluator, as mentioned earlier. This group of evaluators is comprised of co-op and processor staff, dairy industry professionals, and veterinarians. To become a certified evaluator, the individual must meet one of the following requirements:

- Must have a dairy science, animal science or equivalent BS degree plus two years dairy industry experience
- Must have at least two years of veterinary school completed plus two years dairy experience
- Must have eight years of experience in the dairy industry

The certification process consists of a two-day course facilitated by the company that completes third-party evaluations or a certified trainer. Evaluators are required to recertify annually.

Understanding how the FARM customer group and second-party evaluators perceive the program is important to further understand dairy producer perceptions and to identify program areas for improvement. A customer survey and FARM evaluator questionnaire were created to assess perceptions of the FARM Animal Care Program. Two case studies were used to assess perceptions of these two FARM stakeholder groups. The customer survey objectives included assessing customers: 1) knowledge of the program, 2) perceived value and trust with the program, 3) primary information source for program, 4) primary animal welfare concerns, and 5) reasons for program importance. The FARM evaluator questionnaire was created to identify what evaluators thought the main goal of the program was, what the greatest strength of the program was, and which areas of the program evaluators thought could be improved. Results from these case studies can be used to inform future research, compare to producer survey results, and strengthen future versions of the FARM program.

Materials and Methods

Case Study A: FARM Customers

With assistance from university faculty and FARM program staff, a 12-question survey was developed (Appendix V). The survey consisted of 11 content-based questions focused on stated objectives, and 1 demographic question. Format of these questions included: Likert scale, binary, open-ended, and categorical. On Likert scale questions, participants were asked to select a number on a 1 to 5 scale (Likert Scale, 1932), with 1 being “strongly disagree”, 2 “disagree”, 3 “neutral”, 4 “agree”, and 5 being “strongly agree”.

Surveys were distributed in the summer of 2017 during the FARM Customer Forums taking place in three different locations across the nation. The survey was offered to conference participants in a hard-copy form or in an online platform. One survey per company was allotted and company representatives were asked to consult with colleagues and upper management from their company to fill out the survey. Results were compiled in an excel spreadsheet and analyzed through summary statistics.

Case Study B: FARM Evaluators

Each year, FARM staff put together an evaluator conference to discuss issues related to animal welfare, sustainability, and the FARM program. During this conference in the summer of 2017, FARM evaluator attendees were distributed a three-question questionnaire (Appendix VI) in their program packets. The questionnaire asked evaluators three open-ended questions about how they perceive the program. Participants were asked what they thought the main goal of the FARM program was, what the greatest strength of the program was, and which areas of the program could be improved.

Data were analyzed as three separate data sets: main goal of the program, strengths, and areas for improvement. To systematically explore the complexity of these data sets, thematic analysis was used. With thematic analysis, the researcher focuses on searching through the data for themes and patterns (Glesne, 2010 pp. 187). These themes are created by first developing a set of codes. Codes were inductively interpreted from the data by the primary researcher. A final set of codes were developed and described in a code key for each dataset (APPENDIX). Code overlap occurred between the data sets.

An additional researcher participated in the analysis to improve trustworthiness of interpretation. After the primary researcher finished coding, the code keys were distributed to the other researcher. Both researchers reviewed all the data. After coding, the primary researcher developed a set of themes based on code frequency.

Results

Case Study A: FARM Customers

A total of eight FARM customers filled out the customer survey. This was not a statistically significant sample size, so results in this section are presented solely as summary statistics and cannot be considered statistically significant. The companies who participated in the survey reported marketing various dairy products such as fluid milk, butter, cheese, ice cream, variety products, yogurt, whey protein, and powdered milk. The companies identified their target consumers as: everyone, consumers varying in age and demographics and typically shop at a convenience stores for their milk, consumers who like to snack on cheese, US consumers, families, pizza chains, retailers, distributors, mid-income families, and restaurants. All companies identified having a corporate social responsibility policy and half ($n = 4$) stated the National Dairy FARM Program is currently mentioned in it.

When customers were asked what they thought the main goal of the FARM Animal Care program was, they said: I'm not sure , better align the care of the animals across the industry , animal care, provide an objective standard to evaluate farm practices, establish a best practice framework with continuous improvement for farm practices, create more transparency between farm to consumer, , and ensure proper animal stewardship and be responsible [*sic*] and (help with) risk management”.

When customers were asked who they thought should be responsible for informing stakeholders about FARM, half (n = 4) indicated co-ops and processors should inform stakeholders. Others mentioned dairy producers, dairy customers, and educational/promotional groups. Participants indicated that their companies obtain information from many different sources, with co-ops and processors being the most frequent option selected by five participants. When participants were asked about what they thought concerned their consumers the most, five participants indicated they thought antibiotic stewardship was. Use of hormones was the second most selected, followed by sustainability.

Six of the seven participants indicated they thought the program could be improved with the seventh indicating they didn't know if it could be improved. Some of the participants who did think it could be improved, offered how they thought it could be improved through an open-ended question. They indicated that the FARM program could be improved by, “(Banning) use of ionophores in daily feed” and “(Completing) more third-party audit verification.” Another customer suggested,

“I think it's (the program) on track. FARM 3.0 is a great step towards creating some teeth. I hope future version [*sic*] do move in this direction, where appropriate.”

Three customers said the program was primarily important to them because it unifies the dairy industry on animal welfare while two said that it increases consumer confidence in the dairy industry. Two participants said it was primarily important to them because it improves animal health and wellbeing. None of the participants indicated that the program was not important to their company.

When participants were asked what other initiatives besides the FARM program they thought could potentially benefit the image of the dairy industry and improve consumer confidence, one spoke about program communications and antibiotic stewardship:

“The focus on antibiotic stewardship and sustainability are two other key areas. I think the program needs to be better communicated to consumers through the producers or retailers.”

Another recommended more communications as well and said, “More contact between producers and consumers (is needed).” Others suggested to, “continue the conversation, rely on the science, push on the heart of issues.” Some suggested incorporating innovative technologies, “Get out in front of the game on cool things like Newtrient.” Newtrient is a company that provides farmers with environmentally friendly waste disposal options. It also provides other sustainability-focused services.

Likert scale responses were averaged based on question in Table 5.1. Generally, participants agreed with third-party verification and disagreed that the FARM program standards were adequate. Deriving numerical percent values and analyzing this data any further would not be statistically sound due to the low sample size.

Table 5.1. Participant level of agreement with Likert-scale statements on survey

| Statement | Total responses (n) | Mean ¹ | SD | Statement | Total responses (n) | Mean ¹ | SD |
|--|---------------------|-------------------|------|--|---------------------|-------------------|------|
| My organization is knowledgeable about the FARM Animal Care Program. | 8 | 3.12 | 1.36 | The FARM Animal Care Program addresses consumer "hot topics" in the dairy industry. | 7 | 3.86 | 1.07 |
| My organization feels that the FARM Animal Care standards are adequate. | 8 | 2.87 | 0.83 | The FARM Animal Care Program increases consumer confidence in the dairy industry. | 7 | 3.71 | 0.75 |
| My organization feels that the FARM Animal Care Technical Writing Group is structured correctly being | 8 | 3.87 | 0.83 | My organization understands the minimum participation requirements for dairy producers enrolled in the FARM Program and the accountability associated with those requirements. | 7 | 3.71 | 0.49 |
| My organization finds the FARM Program staff to be accessible, knowledgeable, and resourceful for our inquiries. | 8 | 4.25 | 0.71 | The FARM Animal Care Program is valuable to my organization. | 7 | 3.57 | 1.27 |
| My organization finds value in the 3rd party verification process. | 8 | 4.50 | 0.50 | – | – | – | – |

¹Mean response calculated based on answer to Likert scale questions, the higher the score, the more agreement with the statement in the row

Case Study B: FARM Evaluators

A total of 38 evaluators completed the evaluator questionnaire. Three data sets were created based on questionnaire questions: main goal, program strengths, and program weaknesses. Themes for each data set can be seen in table 5.2.

Table 5.2. Themes organized by data set

| Data Set | Themes |
|-------------------------------|--|
| Main Goal | <ul style="list-style-type: none">• Consumer Confidence• Unify the Dairy Industry |
| Program Strengths | <ul style="list-style-type: none">• Continuous Improvement• Unify the Dairy Industry• Program Representation |
| Program Areas for Improvement | <ul style="list-style-type: none">• Communications and Marketing• Teeth• Evaluation Questions/Standards |

When asked about what they thought the main goal of the FARM Animal Care program was two prominent themes were to build consumer confidence and to unify the dairy industry on animal welfare. One evaluator expressed this when they said, “(The main goal is) to assure [*sic*] consumers that dairy cattle are well care [*sic*] for and to set a program to achieve this.” Another added, “The main goal of the FARM program is to provide confidence to consumers and customers of the ethical treatment of dairy animals providing safety of all dairy foods.” Others spoke to the same points when they said the main goal of the program is to:

“Give a credible way to document for the consumer, (and also let them know) that their milk comes from a farm that takes care of their animals.”

“Improve consumer confidence in dairy by continuously improving dairy practices.”

The idea of the program building consumer confidence as a main goal was expressed by many evaluators. They also expressed how they thought the program unified the industry on animal welfare when they said they thought the main goal of the program was to:

“Provide one program for all of US that would be uniform and would be an acceptable program for cheese buyers and customers and industry.”

“Provide uniform national dairy farm animal welfare standards.”

“Bring a unified voice to the dairy industry's animal care standards.”

“To have a national program. So we don't have numerous programs and evaluations for people to go through.”

One unified program for the dairy industry was also seen as a theme when evaluators were asked what they thought the greatest strength of the program was. One evaluator said, “It brings the entire industry together and holds everyone to the same standards.” Others highlighted other stakeholder groups specifically:

“It is one program that producers can go through versus one for each customer...”

“Its organization, and adoption by both producers and the supply chain.”

Another mentioned how it gives, “A common voice/united voice for the dairy industry.”

Main themes for what evaluators thought the greatest strength of the program was included: continuous improvement, unifying the dairy industry, and program representation.

The second theme that emerged through the data included the idea that the program helps farmers. One evaluator said the program, “Helps farmers improve in areas they are weak in because they simply never thought about it.” Another said the program, “Provides continuing education to farmers.” These two evaluators suggested the program helps the farmer with their operation weaknesses and provides an opportunity for education. One evaluator thought the program helped farmers in a different way. They said, “It protects/helps the farmers and the dairies when it comes to animal activists and people with a misunderstanding of farming/dairying.”

Another strength of the program expressed by evaluators was the fact that the program covers 98% of the U.S. milk supply. One said the greatest strength is, “The partnerships they (the program) have built to reach 98% of the milk supply.” Another said, “It represents 98% of our milk supply.”

Main themes for areas where evaluators thought the program could be improved included: communications and marketing, “teeth”, and revision of evaluation questions/standards.

Many evaluators mentioned a need for increased communications and marketing. One evaluator said a weakness of the program is, “Farmer messaging and communication from consumers to the farmer.” Another said, “Get info and results out to members (more efficiently).”

Others mentioned more resources to improve communication:

“(The program needs) more access to additional resources for producers and more veterinary support is needed.”

“I would like to see more resources offered to producers- background checks for employees more resources for employee training.”

“More access to additional resources for producers and more veterinary support is needed.”

“I would like to see more resources offered to producers- background checks for employees more resources for employee training.”

“Provide more info directly to the dairy, videos and assistance with some of the herd health plans- more interactive type of herd health plan that would make it easier for them.”

Others spoke of communicating program changes. “Communicate more on what we are anticipating to change so producers can give appreciation for them being on their side.” Some spoke to the marketing of the program,

“Marketing of program- still a very negative idea of program. Producers view as animal rights activists rather than animal welfare-continuous improvement.”

Communications and marketing was an area of improvement mentioned by many, other suggested the greatest area for improvement was ‘adding teeth’. One evaluator said, “It needs more teeth, customers want more.” Others mentioned teeth and examples of why they were needed, “It’s going to need teeth, it’s a band aide for 1 year, and 3 years is just prolonging the acceptance of practices of tail dockers, etc.” Another agreed with this sentiment when they said, “It needs to be more than once every three years (an evaluation) for herds with employees. Other evaluators allude to more teeth by providing specific ideas on how the program could get ‘tougher’, “As an evaluator, (I think the program needs to) get tougher on dehorning.” Others mentioned more third-party evaluations:

“Third party verification could be broadened to include having all participants having third party verification. Currently not all co-ops/processors will be selected for third party verification.”

“One area of improvement would be more accountability; more third-party audits would ensure more adherence to the rules.”

Lastly, evaluators suggested that the greatest area of improvement for the program was question revision. One evaluator said,

“I feel like it could be revised critically and have user friendly questions. Less repetition of questions.”

Others suggested the same with “clean(ing) up some of the rhetorical questions” and adding “more common-sense questions.” Others suggested questions making questions more specific, “Be more specific about practices on the evaluation; more in-depth specific questions about particular practices.”

One evaluator suggested making questions more equal between management styles, “incorporating questions that make "alternative" management style (organic, biodynamic) to make the process easier (e.g. include certifier and some questions are not applicable).” Another participant mentioned the same with small and large operations.

Evaluators provided insightful suggestions for program improvement and identified some of the program’s main strengths.

Discussion

Similar perceptions were measured among dairy producers in a survey completed in May 2017 (Chapter II, III, and IV) and compared to results from the two case studies presented in this chapter. Results from both case studies in this chapter indicate similarities and differences between the way dairy producers, evaluators, and customers view the FARM Animal Care Program. When customers were asked who they thought should be responsible for informing stakeholders about FARM, half ($n = 4$) indicated co-ops and processors should inform stakeholders. Co-ops and processors were also who producers thought should be responsible for informing stakeholders about the program (37.9% of participants).

Both groups also appeared knowledgeable about the program with the customer group having lower mean average (3.12) than the producer group (3.83). Both groups indicated there was a need to improve program communications, and both indicated they believed the program could be improved.

Producers and evaluators also had similarities in their perceptions. Both groups indicated:

- A need for improved program communications
- Inequalities in the program (small v. large, and organic v. conventional)
- Revision of program standards
- Provide a unified front for the dairy industry on animal welfare

Customers and evaluators both identified an increase for consumer communications about the program as a need. An improvement in communications appeared to be one of the most relevant themes found across all stakeholder groups. Creating a food label could be utilized by NMPF. With consumers knowing more about the program, and with more program advertisement, this may also in turn increase buy-in from stakeholders in the program.

There are some notable differences between the participating groups worth mentioning. Many dairy producers (32.9%) reported that the FARM program is not important to them (Chapter II) while customers said it was primarily important because it unified the dairy industry on animal welfare. Producers had an unfavorable view towards the program when asked if they thought it addressed consumer hot topics, and customers had a neutral view. Evaluators said there was a need for more third-party verification, while some producers mentioned eliminating third-party verification.

Future research should focus on drawing statistically significant sample sizes from each group and further examining the themes obtained from the two case studies included in this chapter. Focus groups with various stakeholder groups could also be conducted to validate the themes discussed in this chapter. Assessing where customers envision the future of this program as they foresee their consumers requests would be an additional piece of information that could be useful. These case studies show that more research should be completed with these two stakeholder groups and the way they perceive animal welfare and the FARM Animal Care program.

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APPENDICES

APPENDIX I:

FARM Evaluation Version 3.0



Version 3.0 Animal Care Evaluation

Evaluation Date: _____

FACILITY

Name: _____ Premise ID# (Optional): _____

Co-op/Proprietary Processor Affiliation (if applicable): _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Owner: _____ Mobile: _____

Email: _____

Manager: _____ Phone: _____

EVALUATOR

Name: _____

Phone: _____

Email: _____

Evaluation Party Type: ☐ 1st ☐ 2nd ☐ 3rd

2nd EVALUATOR

Name: _____

Phone: _____

Email: _____

Company: _____

HERD PROFILE (On Site)

(1) Total animal numbers: _____

(2) Milking cow numbers: _____

(3) Dry cow numbers: _____

(4) Calf (pre-weaned) numbers: _____

(5) Heifer (post-weaned) numbers: _____

(6) Bull numbers: _____

MORTALITY RATE PERCENTAGES (12 Mo)

Stillborn: ☐ 0 - 3% ☐ 4 - 7% ☐ 8% or more ☐ N/A
(up to 24 hrs)

Preweaned: ☐ 0 - 3% ☐ 4 - 7% ☐ 8% or more ☐ N/A
(24 mo. off milk)

Weaned: ☐ 0 - 3% ☐ 4 - 7% ☐ 8% or more ☐ N/A
(off milk to 6 mo)

Heifer: ☐ 0 - 3% ☐ 4 - 7% ☐ 8% or more ☐ N/A
(6 mo Calving)

Cows: ☐ 0 - 3% ☐ 4 - 7% ☐ 8% or more ☐ N/A
(milking and dry)

Somatic Cell Count: ☐ Less than 200,000
(12 Mo. Average) ☐ 200,000 - 400,000

☐ More than 400,000

FACILITIES

Milking: ☐ Parlor/Herringbone
☐ Parlor/Parallel
☐ Tie Stall

☐ Parlor/Parabone
☐ Parlor/Rotary ☐ Robotic ☐ Stanchion
☐ Flatbarn ☐ Other (_____)

Total # of parlor stalls: _____ Milking schedule: _____ (ex: 6-9 AM/PM, 24 hr, etc.)

Total number of employees: ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16 or more



Document Review

Review and confirm documents exist, are dated within last 12 months and contain all components outlined in the question.

1. VCPR

Triggers MCAP

Is there a written Veterinarian-Client-Patient Relationship (VCPR) form signed by the farm owner/manager and the Veterinarian of Record (VOR) that is updated annually, or more often as needed?

Y N

Notes:

2. TRAINING

Triggers MCAP

Relevant to full-time, hired employees with animal care responsibilities.

Exception: Immediate family farm employees are not required to have but are encouraged to do so.

Does documentation exist of training for all (new and existing) employees with animal care responsibilities for stockmanship as well as their assigned animal care responsibilities (such as calf care, euthanasia, non-ambulatory cow management, etc.) at least on an annual basis?

Y N N/A

If answered N/A, notes with justification required.

Notes:

3. THIRD-PARTY VERIFICATION

Is there a signature page on file agreeing to have the farm listed in the random sampling pool for third-party verification?

Y N

Notes:



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered 'Yes' but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

4. EMERGENCY CONTACTS

Are the names and telephone numbers for emergency services, emergency contacts (e.g. the owner, veterinarian, milk handler, equipment dealers and/or power company), and the site address posted in a prominent place on the farm in the language(s) that the employees understand? **Y N**

Notes:

5. NEWBORN AND MILK-FED DAIRY CALVES

Must be documented in training documents

Are identified animal caretakers trained in calf care, nutritional requirements and feeding techniques, including the use of esophageal tube-feeders or other feeding mechanisms? **Y N N/A**

Notes:

*If answered
N/A, notes with
justification required.*

6. NEWBORN AND MILK-FED DAIRY CALVES

Must be documented in training documents

Are animal caretakers trained to handle and restrain calves with minimum stress to the animal? **Y N N/A**

Notes:

*If answered
N/A, notes with
justification required.*



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered 'Yes' but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

7. NEWBORN AND MILK-FED DAIRY CALVES

Are calves moved by lifting, walking or using clean, properly designed mechanical transport devices?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

8. NEWBORN CALVES AND DAIRY BEEF

*Indicate when colostrum
is given and colostrum/
replacer availability*

Do all calves receive colostrum or colostrum replacer soon after birth even if immediately transported off the farm?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

9. MILK-FED DAIRY CALVES AND DAIRY BEEF

Do all calves receive a volume and quality of milk or milk replacer to maintain health, growth and vigor until weaned or marketed?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered 'Yes' but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

10. IDENTIFICATION AND RECORD KEEPING

Permanent forms of identification include: dangle tags, RFD tags, neck chains, registration papers and/or names above individual cow stalls

Is each animal permanently identified? Y N

Notes:

11. IDENTIFICATION AND RECORD KEEPING

Does the dairy maintain permanent, easily accessible drug treatment records that denote how all drugs were used and disposed? Y N

Notes:

12. WRITTEN PROTOCOLS

Are all written protocols readily available, and translated as needed, into the languages understood for employees assigned animal care responsibilities? Y N

Notes:



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered "Yes" but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

13. MILKING PROCEDURES

Is there a specific written protocol and routine for milking that is followed to ensure low-stress handling and animal well-being?

Y N

Notes:

14. DAIRY BEEF

Top Considerations poster acceptable. If older version, provide updated.

Does the dairy have written protocols for culling and transporting to slaughter dairy animals, developed in consultation with the herd veterinarian?

Y N

Notes:

15. DAIRY BEEF

Does the dairy adhere to all withdrawal times for milk and meat, meaning they have not had a milk or tissue residue violation in the last three years?

Y N

Notes:



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered 'Yes' but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

16. ENVIRONMENT AND AIR QUALITY

Preferred to have written protocol but acceptable with verbal affirmation.

Are protocols in place to minimize airborne particles as a way to reduce odors, dust and/or noxious gases?

Y N

Notes:

17. WRITTEN HERD HEALTH PLAN

Does the Written Herd Health Plan include daily observation of all cattle for injury or signs of disease by trained employees?

Y N

Notes:

18. WRITTEN HERD HEALTH PLAN

Does the Written Herd Health Plan include a written protocol for lameness prevention and treatment?

Y N

Notes:



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered 'Yes' but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

19. WRITTEN HERD HEALTH PLAN

Does the Written Herd Health Plan include written protocols for parasite, pest and fly control? **Y** **N**

Notes:

20. WRITTEN HERD HEALTH PLAN

Does the Written Herd Health Plan include vaccination protocols that specify age, class, product and route of administration? **Y** **N**

Notes:

21. WRITTEN HERD HEALTH PLAN

Does the Written Herd Health Plan include written treatment protocols that specify age, class, product and route of administration to ensure food safety, including proper milk/meat withhold times as well as definitions of what cattle are eligible to be marketed? **Y** **N**

Notes:



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered 'Yes' but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

22. WRITTEN HERD HEALTH PLAN

Does the Written Herd Health Plan include a written protocol for managing dystocia? **Y N**

Notes:

23. WRITTEN HERD HEALTH PLAN Triggers CIP

Does the Written Herd Health Plan include written protocols for specific areas of newborn and milk-fed dairy calf management including the following elements? (If all of a-d are answered 'Yes,' answer will default to 'Yes.' If any part answered 'No,' answer will default to 'No.')

**Auto-answered
based on
letters (a-d)**

Notes:

23(a).

Are calves disbudded/dehorned before 8 weeks of age or earlier?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

23(b).

Is pain mitigation provided for disbudding or dehorning in accordance with recommendations of the herd veterinarian?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered "Yes" but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

23(c).

Are all other planned medical procedures, including castration and extra teat removal, performed at the earliest age possible?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

23(d).

Are all other planned medical procedures performed using pain mitigation in accordance with the recommendation of the herd veterinarian?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

**24. WRITTEN
HERD HEALTH
PLAN**
Triggers CIP

Does the Written Herd Health Plan include written protocols for management of cattle that develop disease or become injured, including protocols that specify procedures for managing pain in all applicable age classes?

Y N

Notes:



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered "Yes" but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

25. WRITTEN HERD HEALTH PLAN

Triggers CIP

Does the Written Herd Health Plan include written protocols and training for non-ambulatory animal management that includes the following elements? (If all of a-d are answered "Yes," answer will default to "Yes." If any part answered "No," answer will default to "No.")

**Auto-answered
based on
letters (a-d)**

Notes:

25(a).

Proper movement, including the use of special equipment?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

25(b).

Husbandry that provides access at all times to feed, water, shelter/shade, isolation from other animals, and protection from predators?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

25(c).

Prompt medical care?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

25(d).

Euthanasia in a timely manner if warranted?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered 'Yes' but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

26. WRITTEN HERD HEALTH PLAN

Triggers CIP

Does the Written Herd Health Plan include written protocols and training for euthanasia that align with the methods approved by the AABP and/or AVMA and include the following elements? (If all of a-d are answered 'Yes,' answer will default to 'Yes.' If any part answered 'No,' answer will default to 'No.')

**Auto-answered
based on
letters (a-c)**

Notes:

26(a).

Are designated employees trained to recognize animals to be euthanized and trained on proper euthanasia techniques?

Y N

Notes:

26(b).

*Verify the local
regulations*

Is carcass disposal in compliance with local regulations?

Y N

Notes:

26(c).

Is there a record of mortalities and their causes (e.g. euthanasia, toxic Y mastitis, pneumonia, etc.)?

Y N

Notes:



Interview, Document Review and Observation

Ask interviewee questions 4-28. Ask to view associated documentation that may be hard copy or electronic. Verify by reading specifics within the document. If appropriate, interview employee responsible for management area. Observe animals/facilities for further verification. If written protocols are documented but are determined to not be effectively implemented, question can be answered "Yes" but evaluator is encouraged to create a Continuous Improvement Plan. Calf questions are only to be answered N/A if cows do not calve on the facility and if there are no calves on the facility. All N/A answers must be justified within the Notes section.

27. WRITTEN HERD HEALTH PLAN

Is there a Written Herd Health Plan, developed in consultation with the Veterinarian of Record, to prevent, treat and monitor the incidence of common diseases (which may include, mastitis, metritis, metabolic diseases like milk fever and ketosis, displaced abomasum, pneumonia or infectious diarrhea) and includes ALL of the aforementioned elements (Questions 17- 26)? (If all of questions are answered 'Yes,' answer will default to 'Yes.' If any part answered 'No,' answer will default to 'No.')

**Auto-answered
based on
questions 17-26**

Notes:

28. WRITTEN HERD HEALTH PLAN

Is the Written Herd Health Plan reviewed and updated annually, or more often, as needed?

Y N

Notes:



Informational

The following questions are informational only. Answers to these questions are for internal use only.

29. BREEDING PROGRAM

Is the farm incorporating polled genetics into its' breeding program?

Y N

Notes:

30. DAIRY BEEF

Does the dairy have copies on site and/or use the FARM Program Milk and Dairy Beef Drug Residue Prevention Manual?

Y N

Notes:

31. THIRD-PARTY VERIFICATION

Has the dairy undergone a Third-Party Verification?

Y N

Notes:



Observations

Observe animals/facilities. If appropriate, interview employee responsible for management area to verify.

32. MILK-FED DAIRY CALVES

Calves must be offered feed by day 3 after birth to be satisfactory

Are calves offered fresh, palatable starter feed? **Y** **N** **N/A**

Notes:

*If answered
N/A, notes with
justification required.*

33. WATER

Triggers CIP

Do all age classes of animals (including milk-fed dairy calves) have access to clean, fresh water as necessary to maintain proper hydration?

Y **N**

Notes:

34. FEED

Triggers CIP

Verify with BCS Scores

Do rations provide required nutrients for maintenance, growth, health and lactation for the appropriate physiological life stage?

Y **N**

Notes:

35. FEED

Verify with BCS Scores

Is sufficient feed bunk space provided allowing all animals to feed at the same time or are sufficient quantities of feed available for all animals during a 24-hour period?

Y **N**

Notes:



Observations

Observe animals/facilities. If appropriate, interview employee responsible for management area to verify.

36. FEED

N/A only if do not use feed equipment for other purposes

Is feed equipment washed and disinfected after being used for non-feed purposes?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

37. MANAGEMENT

Triggers MCAP

Is tail docking currently practiced at the dairy?

Y N

Notes:

38. HYGIENE

Do 90% or more of animals in all pens/groups score 2 or less on FARM Hygiene Scorecard? (See Appendix B.)

Y N

Notes:

39. LOCOMOTION

Triggers CIP

Do 95% or more of the lactating and dry dairy herd score a 2 or less on the FARM Locomotion Scorecard (1,2,3)? (See Appendix C.)

Y N

Notes:



Observations

Observe animals/facilities. If appropriate, interview employee responsible for management area to verify.

40. LOCOMOTION INFORMATIONAL

What percentage of the lactating and dry dairy herd scores a 2 on the FARM Locomotion Scorecard? _____ %

Notes:

41. BODY CONDITION SCORE

Triggers CIP

Do 99% or more of the animals have a Body Condition Score of 2 or more? (See Appendix D.) **Y** **N**

Notes:

42. HOCK/KNEE LESIONS

Triggers CIP

Do 95% or more of the lactating and dry dairy herd score a 2 or less when utilizing the FARM Program Hock/Knee Assessment scorecard? (See Appendix E.) **Y** **N**

Notes:

43. INJURED NON-AMBULATORY ANIMALS

Triggers CIP

Do non-ambulatory animals have access to feed and water at all times? **Y** **N** **N/A**

Notes:

*if answered
N/A, notes with
justification required.*



Observations

Observe animals/facilities. If appropriate, interview employee responsible for management area to verify.

44. INJURED NON-AMBULATORY ANIMALS

Are facilities provided to segregate sick or injured animals?

Y N

Notes:

45. INJURED NON-AMBULATORY ANIMALS

Does the hospital area provide protection from the heat and cold through use of shade, fans, water, cooling and windbreaks?

Y N

Notes:

46. ANIMAL ENVIRONMENT

Are all age classes of animals provided all reasonable means of protection from heat and cold?

Y N

Notes:

47. LYING AREA

Does housing allow all age classes of cattle to easily stand up, lie down, adopt normal resting postures, and have visual contact with other cattle without risk of injury?

Y N

Notes:



Observations

Observe animals/facilities. If appropriate, interview employee responsible for management area to verify.

48. LYING AREA

Do all age classes of cattle have a resting area that provides cushion, insulation, warmth, dryness and traction at all times when away from the milking facility?

Y N

Notes:

49. CALVING AREA

Is the calving area soft, cushioned, dry, well-lit and well-ventilated?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

50. FACILITIES

Do self-locking stalls provide an emergency release for animals when necessary?

Y N N/A

Notes:

*If answered
N/A, notes with
justification required.*

51. FACILITIES

Does the dairy farmer monitor and take action to reduce the risk of slips and falls?

Y N

Notes:



Pledge of Participation

I hereby agree to abide by the requirements for membership in the FARM Program, including, but not limited to, meeting all animal and farm maintenance guidelines set forth in the FARM Animal Care Reference Manual. I recognize that my farm will be subject to on-farm evaluations and may be subject to approved third-party verification that I am meeting FARM guidelines. I hereby grant permission to FARM to carry out such approved third-party verification as described in the "Program Integrity Through Third-Party Verification" section of the FARM Animal Care Reference Manual. I further understand that the information collected will be held in confidence except that FARM may provide the collected data where applicable to my co-operative and may use the data in aggregated form in a manner that does not disclose the identity of my farm.

Evaluator Signature: _____ Date: _____

Evaluator Name (PLEASE PRINT): _____

Owner/Farm Representative

Signature: _____ Date: _____

Owner/Farm Representative Name

(PLEASE PRINT): _____

Farm Name

(PLEASE PRINT): _____

APPENDIX II:

Survey Instrument for Dairy Producers

Perceptions of The FARM Animal Care Program Producer Survey

Your participation in this survey will help us understand the perceptions dairy producers have on The National Dairy FARM Animal Care Program. Your input is **important** to us, and we appreciate your time.

1. Are you the operator (producer) of this farm?
☐ Yes → **Go to next question**
☐ No → **Thank you for your time. Please return this survey in the stamped envelope provided.**

2. What is your gender?
☐ Male
☐ Female

3. What year were you born? 19_____

4. How many total lactating cows does your farm have? _____

5. Have you had a FARM Animal Care evaluation on your farm?
☐ Yes
☐ No

6. What is your average net farm income (gross farm income minus farm operating expenses) per year?
 (Please **check range** that applies) **This question will be used for demographic purposes only**
- | | |
|--|--|
| <input type="checkbox"/> Less than \$50,000 | <input type="checkbox"/> \$250,000-\$500,000 |
| <input type="checkbox"/> \$50,000-\$100,000 | <input type="checkbox"/> \$500,000-\$1,000,000 |
| <input type="checkbox"/> \$100,000-\$250,000 | <input type="checkbox"/> More than \$1,000,000 |

7. What is your highest level of formal education completed?
- | | |
|--|---|
| <input type="checkbox"/> Elementary/Primary School | <input type="checkbox"/> Technical/Trade School |
| <input type="checkbox"/> Middle School | <input type="checkbox"/> Bachelor's Degree |
| <input type="checkbox"/> High School | <input type="checkbox"/> Post Graduate |

8. I believe the **main goal** of the FARM Animal Care Program is to:
- _____
- _____
- _____
- _____

9. Please indicate your **level of agreement** with the following statements:

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|----------------------|----------|---------|-------|-------------------|
| a. I am knowledgeable about the FARM Animal Care Program. | 1 | 2 | 3 | 4 | 5 |
| b. I understand my role as a producer in the FARM Animal Care Program. | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|--|---|---|---|---|---|
| c. The dairy industry informs producers about the FARM program. | 1 | 2 | 3 | 4 | 5 |
| d. I have received information on the new version (3.0) of the FARM Animal Care Program that was released January 2017. | 1 | 2 | 3 | 4 | 5 |
| e. I understand the minimum participation requirements for FARM and the accountability associated with those requirements. | 1 | 2 | 3 | 4 | 5 |
| f. A pre-evaluation meeting with my evaluator has helped me understand what will occur during a FARM Animal Care Evaluation. | 1 | 2 | 3 | 4 | 5 |

Additional Comments:

10. Who should be responsible for informing stakeholders (consumers, producers, industry personnel, etc.) about FARM? (Please choose **one**)

- ☐ Co-ops/Processors
☐ Dairy Producers
☐ Educational and Promotional Groups/Producer Associations
☐ FARM Program Evaluators/Staff
☐ University Extension
☐ Veterinarians

11. I am aware of the FARM Animal Care Program technical writing group.

- ☐ Yes
☐ No

12. Which of the following sources do you use most often to gain information about the FARM Animal Care Program? (Please choose only **one**)

- ☐ Co-op/Processor
☐ FARM Program Evaluator/Staff
☐ Fellow Producer
☐ Social Media/Internet
☐ Promotional Group/Producer Association
☐ Articles/Publications
☐ Veterinarian
☐ University Extension

_____ Yes
_____ No

☐ National conference
☐ On-Farm
☐ Online/Webinar
☐ Packet of materials mailed/delivered to my farm
☐ Regional workshop with other producers

_____ Yes
 _____ No
 _____ I am indifferent

_____ Yes
_____ No
_____ I do not know

_____ Yes
_____ No
_____ I do not know

| |
|--|
| |
|--|

18. Please indicate your **level of agreement** with the following statements:

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | N/A |
|---|----------------------|----------|---------|-------|-------------------|-----|
| a. I have a good working relationship with the evaluator who does my FARM Animal Care evaluation. | 1 | 2 | 3 | 4 | 5 | |
| b. My evaluator for the FARM Animal Care Program is qualified to do FARM evaluations. | 1 | 2 | 3 | 4 | 5 | |
| c. In the past, the FARM Animal Care evaluations on my farm were handled correctly. | 1 | 2 | 3 | 4 | 5 | |
| d. I trust the technical writing group will make informed decisions when updating the FARM Animal Care Program. | 1 | 2 | 3 | 4 | 5 | |
| e. Producers should have more opportunities for input in the design and revision of the FARM Animal Care Program. | 1 | 2 | 3 | 4 | 5 | |
| f. A third party evaluation should be used to verify second-party evaluations. | 1 | 2 | 3 | 4 | 5 | |

19. If you answered “disagree” or “strongly disagree” to **18 c**, please explain what was not handled correctly.

20. Please indicate your **level of agreement** with the following statements:

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|----------------------|----------|---------|-------|-------------------|
| a. The FARM Animal Care Program is beneficial to my cows’ health and wellbeing. | 1 | 2 | 3 | 4 | 5 |
| b. The FARM Animal Care Program improves my farm’s profitability. | 1 | 2 | 3 | 4 | 5 |
| c. The FARM Animal Care Program addresses consumer “hot topics” in the dairy industry. | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| d. Overall, the FARM Animal Care Program is valuable to my operation. | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|

21. Have you made any management changes that have improved your operation because of the FARM Animal Care Program?

☐ Yes
☐ No

22. The FARM Animal Care Program is important to me **primarily** because it: (Please choose **one**)

☐ Improves animal health and wellbeing
☐ Increases consumer confidence in the dairy industry
☐ Increases farm profits
☐ Helps send high quality milk into the marketplace
☐ Protects my milk market
☐ Unifies the dairy industry on animal welfare
☐ The program is not important to me

23. How many years have you been a dairy producer? _____ years

24. What is your annual average milk production per cow? _____ lbs/cow

25. Who is your co-op or processor? _____

26. Do you have a good working relationship with your veterinarian?

☐ Yes
☐ No
☐ I am Indifferent

27. Do you have any history of corrective action plans, mandatory corrective action plans, or continuous improvement plans created due to a FARM animal care evaluation?

☐ Yes
☐ No

28. How many dairy beef animals are raised on your operation each year with intent to sell for slaughter? (i.e. feeding out bull calves, fed steers, etc.) _____

Any Additional Comments?

29. Are you willing to participate in a follow-up interview?

_____ Yes→ **Move on to question 34**

_____ No→ **Thank you for your time. Please return this survey in the stamped envelope provided.**

30. Are you willing to participate in a follow-up interview?

_____ Yes→ **Go to question 31.**

_____ No→ **Thank you for your time. Please return this survey to Colorado State University in the stamped envelope provided.**

31. How can we reach you?

Name _____

Email _____

Phone _____

APPENDIX III:

Coding Keys Used for Producer Survey Data

Coding Key: Main Goal of Program

| Theme/Code | Definition/Examples |
|--|--|
| Activists <ol style="list-style-type: none"> Appease, give victory Give in to... | <p>These are phrases or quotes where the producer refers to activists, special interest groups, giving in to PETA, etc.</p> <ul style="list-style-type: none"> “...appease activists and their interests” “Let the animal rights activist run farmers out of business” |
| Animals <ol style="list-style-type: none"> Ensure health/wellbeing Ensure humane practices/treatment Using sound science to create protocols that ensure animal health | <p>These are phrases or quotes that directly relate to the producer talking about animals. Keywords may include: ensure health, wellbeing, animal care protocols, etc.</p> <ul style="list-style-type: none"> “...also, to be able to change the program when the science and a practice is proven to work toward the health of the animal” “Make sure animals are well cared for” |
| Build Relationships <ol style="list-style-type: none"> “Bridging the gap” between producers and consumers Multiple stakeholder groups mentioned | <p>These phrases or quotes talk about multiple stakeholder groups and building relationships between them.</p> <ul style="list-style-type: none"> “Maintain a connection between producers and consumers...” “Serve as a link between producer and consumer ensuring humane animal handling to all involved” “...to ensure quality, humane care of our nation's dairy cows to our cooperatives, retail partners, and ultimately end consumers” |
| Consumers <ol style="list-style-type: none"> Build confidence/relationships Educate the uneducated Improve public image/perception | <p>These are phrases or quotes where the producer talks about consumers. Keywords may include: consumer confidence, educate consumers, improve public's perception of dairy, etc.</p> <ul style="list-style-type: none"> “Build confidence for the consumer of dairy products” “To improve public perception of dairy farms” |
| I'M ANGRY <ol style="list-style-type: none"> Self-explanatory... | <p>This code was designed for a reason. Some producers were ANGRY and expressed that multiple times throughout the survey. These comments are vulgar most times. This code may appear alongside other content based codes.</p> <ul style="list-style-type: none"> “Screw the dairy industry over force farmers to follow new stupid regulations” “F... YOU!” |
| Irrelevant/Don't Know | <p>These are phrases or quotes that are either irrelevant to the question, are off topic, or the producer states they do not know what the main goal is.</p> |
| Producers <ol style="list-style-type: none"> Control/dictate operation, intrude on decision making, cause issues Drive out small producers, vertically integrate Increase costs Provide standards, help producers Make sure producers are taking care of animals | <p>These are phrases or quotes related to producers talking about themselves or other producers. Phrases or quotes could mention: controlling or causing issues, providing standards, or making sure producers are taking care of their animals. All refer to the producer/farmer.</p> <ul style="list-style-type: none"> “To have power and control over private farms...” “Help provide adequate management tools for producers to make a better farm lifestyle” |
| Retailers/Co-ops/Processors <ol style="list-style-type: none"> Give in to consumer demands Be invasive, examine farms Increase groups' profits Ensure markets | <p>These are phrases or quotes where the producer refers either to the retailer, customer (i.e. Hershey, Kroger, etc.), or co-op/processor.</p> <ul style="list-style-type: none"> “...these fringe elements can put so much pressure on retailers they have to buckle under their demands” “Give way for coops and processors to examine farms cattle” |
| Unify Welfare | <p>Specifically mentions unifying welfare efforts or the idea of “one” animal welfare program.</p> <ul style="list-style-type: none"> “...also, to allow a one agency certification so all customers of our processor do not need to do their own individual evaluation, they trust the farm certification” “Provide a consistent program of care standards across the entire US that is verifiable and has accountability” |

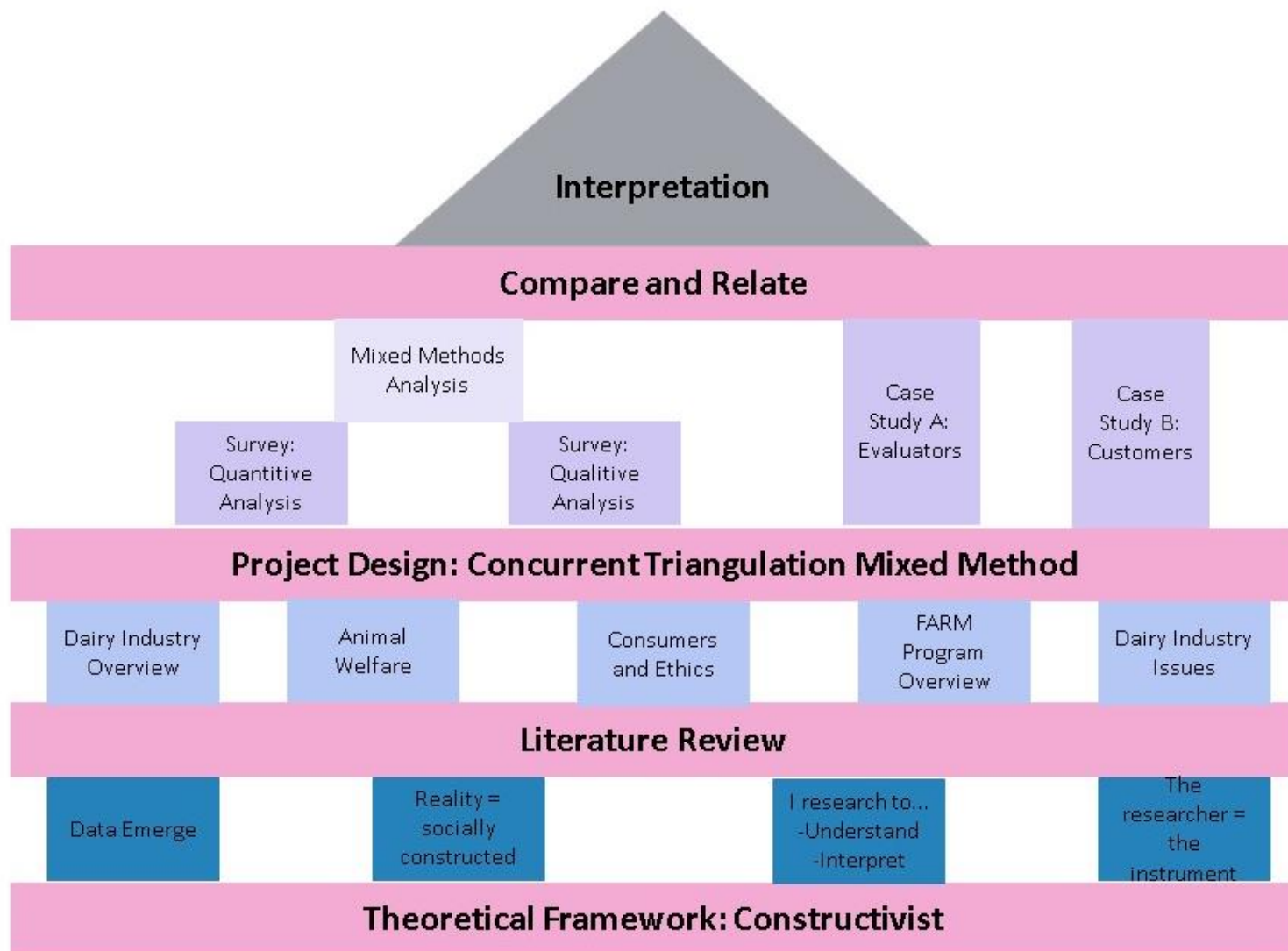
Coding Key: Additional Feedback

| Theme/Code | Definition/Examples |
|--|--|
| Distrust of program <ol style="list-style-type: none"> Question intentions of program Expresses distrust of program Question competence of FARM/NMPF/Technical Writing Group | <p>These are phrases or quotes where producers express distrust of program or question competence of FARM, NMPF, or Technical Writing Group.</p> <ul style="list-style-type: none"> “People in an office telling me how to run my farm” “I am a small producer who is one on one with my animals not one who milks numbers I am not liking some one who take a class and say I know whats best!” “Regulation after mandate regulation from persons in a office...” “...a few "elite experts" set the guide lines for this program, and chances are they have never operated a dairy farm for a living” |
| Guidelines Are Common Sense <ol style="list-style-type: none"> “Already being done” Without the program, these things would be done anyways Guidelines redundant | <p>These are phrases or quotes in which producers indicate program and/or guidelines are common sense. They may indicate they “already do these things” as well.</p> <ul style="list-style-type: none"> "FARM program as outlined seems quite adequate as written- 99% is common practice irrelevant to the program on most farms!!" "We are doing these things anyways and do not need the program" "The requirements for FARM were already in place on our dairy, now we just have documentation of that" |
| Consumers/Public <ol style="list-style-type: none"> Guiding/pushing program Uneducated, educate | <p>These are phrases or quotes in which the producer references the consumer. This could include consumer education, misinformed consumers, etc.</p> <ul style="list-style-type: none"> “Common people have very little knowledge of farm procedures just the drama of the news media” “Do we have some allegiance to them or do we bow to the consumer blindly? Education has to be a big part of this” |
| Inequalities in Program <ol style="list-style-type: none"> Herd size- small producer disadvantage “FARM is designed for larger operations” Organic farm disadvantage | <p>These are phrases or quotes that speak on disadvantages of a specific producer group (i.e. small, organic, etc.).</p> <ul style="list-style-type: none"> “This program is basically designed for large operations with many employees. For small family owned and operated, this program is a hassle and more red tape and restrictions for us” “It seems all you want are big farms or care about” |
| Cost of Program <ol style="list-style-type: none"> Increased costs, no perceived benefits Compensation for program | <p>These phrases or quotes are where the producer talks about cost of program. This could include wanting to be compensated, the program costs the producer money, etc.</p> <ul style="list-style-type: none"> “Pain mitigation costs more money to farmer- we don't get enough money for our milk & yet all expenses keep rising- don't make new standards that cost more money!!!" “Who paying for this program and do you think I am going to get paid more for doing this?” |
| Publicity/Communication | <p>These phrases or quotes talk about needing improved communication and publicity of the program.</p> <ul style="list-style-type: none"> “Need improved program communications” “Needs more publicity” |
| Tail Docking | <p>This code was designed to group all tail docking quotes and phrases together. If the producer mentions tail docking, this code would be used.</p> <ul style="list-style-type: none"> “I strongly disagree with the tail docking ban” |
| “Trying my best”/ The Heart of the Producer <ol style="list-style-type: none"> Justification of taking care of animals (I take care of my cows) “Step in my shoes” | <p>In these phrases or quotes the producer either talks about how they are doing their best, stating they take care of their animals, or encompasses a narrative about why they love their cows/being a dairyman.</p> <ul style="list-style-type: none"> “I just try to do a good job everyday” “As a dairy farmer I'm always looking to care for my animals in the best way possible” “We do take care of our cows” |

| | |
|---|---|
| I'M ANGRY Self-explanatory... | <p>This code was designed for a reason. Some producers were ANGRY and expressed that multiple times throughout the survey. These comments are vulgar most times. This code may appear alongside other content based codes.</p> <ul style="list-style-type: none"> • “Screw the dairy industry over force farmers to follow new stupid regulations” • “F... YOU!” |
| Control/Dictatorship <ol style="list-style-type: none"> Forcing program on producers Controlling what producers do | <p>These quotes or phrases are where the producer talks about the program being forceful, over-powering, a dictatorship, etc. Key words to look for: force, power, control, dictatorships, etc.</p> <ul style="list-style-type: none"> • “I feel this (the program) is all about power and control” • “So, if you want a quality product let us do our jobs as we see fit and quit trying to force new rules on us” • “It is not voluntary because you are told if you don't sign up they won't market your milk. This is nothing but a dictatorship and should be stopped” |
| Random/ Don't Know | <p>These are phrases or quotes that do not fit in any of the themes listed above or producer says they don't know about the program.</p> |
| Welfare/Animal Care=Production <ol style="list-style-type: none"> The idea that good care equals welfare which equals profit | <p>These are phrases or quotes that refer to the idea that good care and welfare is equivalent to making money.</p> <ul style="list-style-type: none"> • “If a farmer does not take care of his animals neither will they make Him any money” • “We do take care of our cows; If you didn't you wouldn't be profitable” |
| No Need for Program <ol style="list-style-type: none"> Do not need program Program needs to go away Program will get “worse and stricter” | <p>These phrases or quotes indicate the producer does not see a need for the program, the program is not valuable, and the program should be scrapped.</p> <ul style="list-style-type: none"> • “I personally don't think we need this program” • “Did not need this program to care for my animals!!!” • “Will no longer participate in program” • “Scrap it!” |
| Producer Input <ol style="list-style-type: none"> Program needs more producer input Program needs to be more farmer friendly Gratitude towards survey | <p>These phrases or quotes are where the producer expresses a need for more producer input in the program, the program needs to be more producer friendly, or they are thankful for the opportunity to have their voice heard in the survey.</p> <ul style="list-style-type: none"> • “My feelings are individual farmers had no say in the setting up of this program” • “Without producer input, why should we trust the FARM program? Because I am given the opportunity, I will try to comment on th Farm program as I and 99% of all my fellow dairymen in our area feel about it” • “Love this survey, thank you for putting this together. It is important producers can have their voice heard. Thank you for asking us to participate in a follow-up interview” |
| Activists <ol style="list-style-type: none"> Appease, give victory Give in to | <p>These are phrases or quotes where the producer refers to activists, special interest groups, giving in to PETA, etc.</p> <ul style="list-style-type: none"> • “... it's been taken over by the animal rights activist and should be called what it is, FARCE (Forcing Acceptance of Ridiculous Consumer Expectations)” |
| Improvement Suggestions | <p>These are phrases or quotes where the producer directly says how the program could be improved or they state the program needs improvement.</p> <ul style="list-style-type: none"> • “Improvements are always needed. Mandates need enforcement to work, which creates hostility. Our University's ext. have brought lots of change by creative suggestion not intervention. might be better option” |
| Unify Welfare | <p>Specifically mentions unifying welfare efforts or the idea of “one” animal welfare program.</p> <ul style="list-style-type: none"> • “...also, to allow a one agency certification so all customers of our processor do not need to do their own individual evaluation, they trust the farm certification” • “Provide a consistent program of care standards across the entire US that is verifiable and has accountability” |

APPENDIX IV:

Conceptual Map of Project Design



APPENDIX V:

Survey Instrument for FARM Customers

Perceptions of The FARM Animal Care Program Customer Survey

Your participation in this survey will help us understand the perceptions customers have on The National Dairy FARM Animal Care Program. Your input is **important** to us, and we appreciate your time.

1. What dairy products does your organization market? (Check **all** that apply)

☐ Butter
☐ Cheese
☐ Dry (powdered) milk
☐ Ice cream
☐ Milk (fluid)
☐ Variety products (sour cream, cream cheese, coffee creamer, etc.)
☐ Whey protein
☐ Other: _____

2. Who are your target consumers? (i.e. who consumes your products the most)

3. Do you have a corporate social responsibility policy?

☐ Yes→ **Go to next question (3a)**
☐ No→ **Go to question 4**
☐ I do not know→ **Go to question 4**

3a. Is the National Dairy FARM Program currently mentioned in your corporate social responsibility policy?

☐ Yes
☐ No
☐ I do not know

4. I believe the **main goal** of the FARM Animal Care Program is to:

5. Who should be responsible for informing stakeholders (consumers, producers, industry personnel, customers, etc.) about FARM? (Please choose **one**)

☐ Co-ops/Processors
☐ Dairy Customers
☐ Dairy Producers
☐ Educational and Promotional Groups/Producer Associations
☐ FARM Program Evaluators/Staff
☐ University Extension
☐ Veterinarians

6. Please indicate your **level of agreement** with the following statements:

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|--|----------------------|----------|---------|-------|-------------------|
| a. My organization is knowledgeable about the FARM Animal Care | 1 | 2 | 3 | 4 | 5 |
| b. My organization feels that the FARM Animal Care standards are adequate | 1 | 2 | 3 | 4 | 5 |
| c. My organization feels that the FARM Animal Care Technical Writing Group is structured correctly being made up of farmers, industry representatives, veterinarians, and animal scientists. | 1 | 2 | 3 | 4 | 5 |
| d. My organization finds the FARM Program staff to be accessible, knowledgeable, and resourceful for our inquiries. | 1 | 2 | 3 | 4 | 5 |
| e. My organization finds value in the 3 rd party verification process. | 1 | 2 | 3 | 4 | 5 |

7. Which of the following sources do you use most often to gain information about animal welfare?
(Please choose **all** that apply)

☐ Activist Organization
☐ Co-op/Processor
☐ FARM Program Evaluator/Staff
☐ National Dairy Organizations (i.e. DMI, IC, FARM, etc.)
☐ Social Media/Internet
☐ Promotional Group/Producer Association
☐ Articles/Publications
☐ Veterinarian
☐ University Extension
☐ Other: _____

8. What concerns your consumers the most? (**Please rank your top 3**, 1 being the greatest concern)

☐ Dehorning and castration
☐ Antibiotic stewardship
☐ Cow and calf separation
☐ Housing (i.e. tie stalls, pasture access, indoor facilities)
☐ Sustainability
☐ Use of hormones
☐ Other: _____

9. Do you think the FARM Animal Care Program could be improved?

☐ Yes
☐ No
☐ I do not know

9a. If you answered “yes” to **question 9**, please explain:

10. The FARM Animal Care Program is important to my organization **primarily** because it: (Please choose **one**)

- ☐ Improves animal health and wellbeing
- ☐ Increases consumer confidence in the dairy industry
- ☐ Helps my organization be more profitable
- ☐ Helps send high quality milk into the marketplace
- ☐ Unifies the dairy industry on animal welfare
- ☐ The program is not important to me

11. Please indicate your **level of agreement** with the following statements:

| | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | N/A |
|---|----------------------|----------|---------|-------|-------------------|-----|
| a. The FARM Animal Care Program addresses consumer “hot topics” in the dairy industry. | 1 | 2 | 3 | 4 | 5 | |
| b. The FARM Animal Care Program increases consumer confidence in the dairy industry. | 1 | 2 | 3 | 4 | 5 | |
| c. My organization understands the minimum participation requirements for dairy producers enrolled in the FARM Program and the accountability associated with those requirements. | 1 | 2 | 3 | 4 | 5 | |
| d. The FARM Animal Care Program is valuable to my organization. | 1 | 2 | 3 | 4 | 5 | |

12. Besides the FARM Animal Care Program, what other initiatives could potentially benefit the image of the dairy industry and improve consumer confidence?

Any Additional Comments?

13. Are you willing to participate in a follow-up interview?

☐ Yes→ **Move on to question 34**

☐ No→ **Thank you for your time. Please return this survey in the stamped envelope provided.**

**Thank you for your time.
We appreciate your participation.**



ANIMAL SCIENCES
COLORADO STATE UNIVERSITY



APPENDIX VI:

Questionnaire Instrument for FARM Evaluators



ANIMAL SCIENCES COLORADO STATE UNIVERSITY

Perceptions of the FARM Animal Care Program Evaluator Questionnaire

1. I believe the main goal of the FARM Animal Care Program is to:

2. What is the greatest strength of the FARM Animal Care Program?

3. In which areas could the FARM Animal Care Program improve, if you believe it could be improved?

**Thank you for your time.
We appreciate your participation.**