An Outreach and Education Campaign for J.S. West and Companies

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Katie Lauren Veenstra

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Abstract

The purpose of this project, specifically the outreach and education campaign created for J.S. West and Companies, was to educate consumers, specifically students, on the egg industry. The key objectives of the presentation that was created to be taken into a school setting were to increase students’ knowledge, interest, and understanding of the topic. After the presentation was created with research and public perception having been gauged at fairs and farmers markets, it was given at several schools and surveys were given to gauge the success of the campaign in meeting the projects objectives. The findings and results from the surveys were positive and definitively showed that the presentation was successful in meeting the objectives of the project. Students’ knowledge, interest, and understanding of the egg industry, animal welfare, and issues facing egg farmers all increased as proven by the survey results.
Acknowledgements

In the creation of this campaign, there are several people who provided guidance, support, and advice towards its successful completion. Jill Benson, Senior Vice President of J.S. West and Companies and Mike West, Vice President of J.S. West and Companies were both instrumental in the creation and implementation of this campaign and presentation. Their guidance provided direction, while their hands-off strategy allowed me to make the most of this project and internship. I thank Mike and Jill and everyone at J.S. West and Companies for their willingness to set up the internship program for me, and for their continued guidance and support.
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Chapter One-Introduction

In today’s society, agriculture plays a vital role in the ability to sustain our population through feeding the world. Agriculture has long been the foundation of our nation and economy and just as times have changed, so have the processes in which farmers produce the food to feed the world. When the general public is not directly connected to agriculture, they often do not understand how or why certain food processes occur. It has been said that today’s population is three to four generations removed from the farm. In other words, even great grandparents of today’s middle-aged society weren’t involved in agriculture. To that end, less than two percent of our population is directly involved in agriculture today. There is an obvious disconnect between the public and their food and the gap is widening.

Today’s consumers are bombarded with messages about agriculture from those who are not involved in the industry. From organizations such as People for the Ethical Treatment of Animals (PETA) and the Humane Society of the United States (HSUS), to the flawed messages shown on television and in the news, consumers are failing to see the entire and truthful picture of agriculture; especially when it comes to the poultry industry. According to an article entitled “Consumers Notice Negative Press” by John Maday, Kansas State University conducted research regarding how publicity influences consumer behavior. The study concludes that animal welfare coverage in the media of the poultry industry has risen 253 percent between 1999 and 2008. “Media interest is usually triggered by animal-rights groups initiating a campaign against an animal industry or practice or by some adverse event that compromises animal welfare” (Coleman, 2010, p. 74). The consumers’ lack of knowledge and understanding of agriculture was exploited when Proposition 2, also known as the Prevention of Farm Animal Cruelty Act,
landed on the California ballot in 2008 and voters were asked to vote on how certain animals should be confined. California’s voters passed Proposition 2 with an overwhelming majority, changing the poultry industry, specifically egg production, forever. Proposition 2 showed the agriculture industry that the general population cares for the treatment of animals, but they are misinformed and uneducated on why certain processes and procedures are used in agriculture. They do not understand, and some do not care to understand, that they are scientifically proven, sound, and humane, and allow farmers to produce the safe, wholesome, and nutritious food consumers expect when they sit down to eat.

As an industry, agriculture has generated decades of efforts to educate the general population and consumers about where their food comes from. Campaigns have been developed, planned, and implemented to communicate to the public about agriculture and how their food gets from farm to fork. However, the poultry industry needs to take a more active stance in educating consumers about how chickens are raised and cared for so issues such as Proposition 2 do not occur in the future. There is great opportunity for farmers, ranchers, and communicators to reach out and educate the public about how the production efficiencies in agriculture are balanced with the publics’ expectation of animal care.

**Statement of the Problem**

Due to an increasing amount of misconceptions surrounding the poultry and egg industries, it is vital the public be educated about those issues and others when it comes to egg production. It is important to reach out to the public in a manner they can better understand to educate them that egg farmers balance production efficiencies with animal care and welfare. The problem is there is a large disconnect between the egg industry and consumers due to a lack of
knowledge and understanding on the consumers’ part and a lack of outreach and education effort on the farmers’ part.

**Importance of the Project**

It is important action be taken to educate consumers about the poultry and egg industries because consumers have valid concerns about the way their food is raised. Consumer concerns are valid because most people are uneducated and unaware of the safety precautions taken and the humane care given to hens in the egg industry. It is important for farmers to reach out to consumers and educate them before organizations such as PETA and HSUS have the chance to tell people that the way farmers are producing their food is wrong. It is vital that consumers and the public become educated on how animals are treated and cared for because the general public are the voters making the decisions, both on ballot initiatives and by using their dollars to vote when they make purchases in the store. According to Grahame John Coleman in his article “Educating the Public: Information or Persuasion?”

Public attitudes have a significant role in determining how people behave both as consumers and as citizens. This, in turn, affects the commercial viability and even the sustainability of animal industries. Furthermore, public attitudes about animal welfare are often based on limited knowledge, and the public’s beliefs are largely acquired from the mass media, perhaps filtered by opinion leaders (Coleman, 2010, p. 80). Coleman continues, “Therefore, there is a need to ensure that the community is well informed because community views affect decision makers at the political, regulatory, and retail levels, with considerable consequences for all” (Coleman, 2010, p. 80). It is necessary that the general public and consumers be informed about agriculture because the chance for negative consequences is too costly politically, economically, and socially.
**Purpose of the Project**

The purpose of this project is to develop and implement an education and outreach campaign that will seek to educate consumers and clear up some of the common misconceptions of laying hen treatment in egg production. This project seeks to educate consumers on issues such as Proposition 2 and how those issues affect egg farmers and their ability to meet the demand for food. Finally, the campaign that is developed will educate consumers on J.S. West and Companies, a family owned and operated company in Modesto, California involved in egg production, and their use of enriched colony housing system as a way of enclosing hens instead of the conventional cages. The campaign developed will make use of a display at farmers markets and fairs to gather research and gauge public perception, and then use that information to create a presentation to be taken into a school setting. This is all being produced in an effort to educate the public about the egg industry, in particular J.S. West, and the steps they’ve taken to comply with Proposition 2. More broadly, this project’s goal is to communicate to consumers where their food comes from and how eggs are produced, along with the fact that in agriculture, there is a balance between production efficiency and the public’s expectation of animal care and welfare.

**Objectives of the Project**

The objectives to accomplish the purposes of this project are:

- To develop and implement an outreach and education campaign for J.S. West in Modesto, CA through a summer internship that has to do with the egg industry, where eggs come from, Proposition 2, and enriched colony housing systems. This campaign will include visits to fairs, farmers markets, and schools;
• Take the campaign into school settings, including high schools and junior colleges.

The anticipated outcome of presenting the campaign in a school setting would be to:

  o Increase students’ knowledge of egg production and issues affecting the egg industry;

  o Increase students’ interest level in the topic;

  o Increase students’ understanding of the topic;

  o Increase students’ knowledge of how eggs get from farm to table and where eggs come from;

  o Increase students’ understanding of the way egg farmers treat their animals.

**Definitions of Important Terms**

**Animal Welfare:** Treating animals in a way that is considered humane and doesn’t cause the animal to suffer unnecessarily.

**Aviary System:** A system of housing hens that is similar to the floor system but has multi-tier platforms which make use of the height of the buildings.

**Conventional (Battery) Cage:** A cage system that is the most widely in egg production that allows the hens to be away from their feces and provides constant access to water and feed.

**Farmers Market:** A food market often held in a public place on a regular schedule where local farmers sell their fruits and vegetables and often other food products such as meat, cheese, and bakery products directly to the consumer.

**Floor Systems:** Allows hens to be housed on the floor of a building instead of in cages. The buildings often have nest boxes for the hens to lay their eggs and are often equipped with an automatic egg collection system.
**Furnished Cage:** A style of cage used in egg production that may be similar to conventional cages but contain several amenities for the hens, including perches, nesting areas, and materials that aid in foraging and dustbathing; also referred to as modified or enriched cages, or enriched colony systems.

**Humane Society of the United States (HSUS):** An animal protection organization that was the main sponsor of California’s Proposition 2. According to their website, they are the nation’s largest animal protection organization with the support of 11 million Americans. They work to reduce suffering and improve the lives of all animals by advocating for better laws, investigating animal cruelty; conducting campaigns to reform industries; performing animal rescue and emergency response; and providing care to animals through sanctuaries, emergency shelters, wildlife rehabilitation centers, and clinics.

**Non-Cage (Cage-free):** A system of raising hens that doesn’t include the use of cages but can still house thousands or tens of thousands of hens. Hens in non-cage systems can also be given access to the outdoors.

**People for the Ethical Treatment of Animals (PETA):** An animal rights organization that, according to their website, focus their attention on four main areas where the largest number of animals suffer for the longest period of time: on factory farms, in the clothing trade, in laboratories, and in the entertainment industry.

**United Egg Producers (UEP):** A cooperative of egg producers from across the United States that represents more than 95% of the nation’s egg laying hens.

**UEP Certified:** A voluntary certification program created in 2002 based on the recommendations of the Scientific Advisory Committee. Egg producers involved in the certification program must follow the Animal Husbandry Guidelines as set forth by the
committee and they must be implemented on 100% of the flock as checked by a third party auditor. If they pass they audit, they may sell and market their eggs as being “UEP Certified.”

**UEP Scientific Advisory Committee:** A committee that began in 1999 with Dr. Jeffrey Armstrong as the chair that was charged with doing an independent review of the egg industry production processes.

**Summary**

As fewer and fewer American’s are involved in agriculture, it is necessary that information be shared with the general public about the industry that is crucial to our economy and our very survival. There are many misconceptions surrounding agriculture, specifically the egg industry, which can only be cleared up through educating and communicating to the public. It is vital to the future of the poultry industry that consumers understand where their food comes from and how that food is produced. Without that knowledge, consumers can have numerous negative impacts on the viability and sustainability of an industry that is essential to feeding the public.

Through this project, an outreach and education campaign will attempt to educate the public, specifically students, on the common misconceptions prevalent in the egg industries. Specifically, the presentation used in schools will attempt to increase students’ interest, understanding, and knowledge of the egg industry and better their understanding and perception of farmers and how they treat their animals. The campaign and presentation will be planned, developed, and implemented as part of a summer internship through J.S. West and Companies in Modesto, California. The campaign will not only seek to clear up misconceptions, but it will also seek to educate people about J.S. West, Proposition 2, industry-wide issues, and J.S. West’s
use of the enriched colony housing system. This entire campaign is being conducted to open lines of communication with the public, begin to change their attitudes and beliefs towards the egg industry, and increase their trust of their food supply and the agriculture industry as a whole.
Chapter Two-Review of Literature

The poultry industry, specifically egg production, has gone through some major changes over the past several years. These changes have come about as new regulations on the care for laying hens used for the production of eggs. In order to effectively communicate to the public about the industry, it is essential to look deeper into the confinement and welfare of laying hens, as well as how to effectively plan and implement a public education and outreach campaign.

**US Egg Industry Statistics**

The United States egg industry is a large and growing industry. The United Egg Producers (UEP) has compiled egg industry statistics under the tab “General US Stats” on their website. Per capita egg consumption, as measured by dividing the total egg production by total population, has increased from 239.7 in 1998 to an estimated 248.9 in 2012. During that time period, there was a high of 258.1 in 2006. Currently, the top five egg producing states, based on the number of laying hens in thousands, are:

1. Iowa: 52,302
2. Ohio: 26,904
3. Pennsylvania: 24,392
4. Indiana: 22,825
5. California: 18,876

These top five states make up 50% of all US egg layers. Texas, Michigan, Minnesota, Nebraska, and Florida round out the top ten egg producing states. Also, according to the website, “In 2011, the average number of egg-type laying hens in the U.S. was 281 million. Flock size for May 1, 2012, was 283 million layers, increasing from last year’s 281. Rate of lay per day on May 1,
2012 averaged 73.6 eggs per 100 layers, up 1% from last year” (UEP, “General US Stats”).

With the trend towards cage-free and organic production, as of March 2012, cage-free production was 5.7% of the total U.S. flock size. Of that 5.7%, 2.9% was organic, and 2.8% was other. Another statistic of the egg industry is that in 2011, an estimated 219.54 million cases of shell eggs were produced. These cases are broken down as follows:

- 125 million cases (56.89%) went to retail
- 69.7 million cases (31.7%) were further processed
- 17.56 million cases (8.0%) went for foodservices use
- 7.3 million (3.3%) were exported

This is a pretty broad overview of the egg industry in the US but it serves to prove the egg industry is one that affects everyone on a large scale.

**Proposition 2**

On November 10, 2008, California voters approved the Prevention of Farm Animal Cruelty Act, also known as Proposition 2, with a 63% majority. The Humane Society of the United States advocated and sponsored Proposition 2. As stated in the text of the initiative, “The purpose of this Act is to prohibit the cruel confinement of farm animals in a manner that does not allow them to turn around freely, lie down, stand up, and fully extend their limbs.” Under the adopted initiative, in Section 25990: Prohibitions, it states, “In addition to other applicable provisions of law, a person shall not tether or confine any covered animal, on a farm, for all or the majority of any day, in a manner that prevents such animal from: (a) Lying down, standing up, and fully extending his or her limbs; and (b) Turning around freely.” Under Section 25991: Definitions, “covered animals” are defined as “any pig during pregnancy, calf raised for veal, or egg-laying hen who is kept on a farm.”
Now that the voters have approved this initiative, California egg producers are forced to convert their conventional cage systems to larger, more spacious enclosures that comply with Proposition 2 requirements. The vague language included in the proposition has been a source of concern for egg producers; one reason being there are no set requirements for the proposed confinement, making it difficult for farmers to comply.

**UEP Confinement Requirements**

The United Egg Producers (UEP) is an egg farmer cooperative with members from across the United States representing the ownership of approximately 95% of all the nation's egg-laying hens (UEP, “About Us”). UEP is a voluntary cooperative and egg producers may choose to join its membership. According to the UEP website:

> With a nation of more than 300 million people and a world population of approximately 6 billion and expected to grow to 9 billion by 2050, we know that egg farmers play an important role in producing an abundance of affordable, safe food. Eggs are an important source of protein and a healthy component of most everyone's diet. We also recognize that our farm members have the responsibility to produce eggs with professional care for their animals, while being good stewards of the environment and understanding the importance of human food safety.

Toward that end, in 1999, UEP took steps to begin an independent review of industry production processes (UEP, “Animal Welfare”). UEP asked Dr. Jeffrey Armstrong, then Dean of Agriculture and Natural Resources at Michigan State University and now President of California Polytechnic State University, San Luis Obispo, to form a scientific committee to conduct the independent assessment of United States egg farming. The committee presented their recommendations for major and costly animal husbandry changes in the fall of 2000 and the
Board of Directors approved them. UEP then began developing a voluntary industry program using the guidelines presented by the committee that could be implemented by egg farmers. In April 2002, the UEP Certified program was launched. In order to receive UEP certification, egg farmers must implement the scientific guidelines on 100% of their flock as checked by an auditing program that was established to assure full compliance. According to the UEP website, today, more than 80% of all eggs produced in the United States are produced under the UEP Certified guidelines.

In the “United Egg Producers Animal Husbandry Guidelines for U.S. Egg Laying Flocks, 2010 Edition,” the UEP outlines the guidelines required for UEP certification. Under the “Housing and Space Guidelines” in the “Guidelines for Cage Production” section, it states that “Numerous studies have shown that decreasing space allowance in cages to below a range of 67-86 square inches per hen significantly reduces the welfare of the hen, hen-housed egg production, and increases mortality” (UEP, “United” p. 18). Therefore, under the “Guidelines for Cage Production Systems,” the third guideline states: “Space allowance should be in the range of 67 to 86 square inches of usable space per bird to optimize hen welfare” (UEP, “United” p. 18). Though this is not a mandatory requirement for all US egg producers, it is a requirement to be UEP Certified.

Housing and space guidelines for UEP Certification have changed over the past several years. According to the 2010 guidelines under the section “Time Period for Implementations,” requirements have gone from 56 square inches for white leghorn hen hatched after April 1, 2002 to the current 67 square inches for chicks hatched after April 1, 2008 (UEP, “United” p. 21). The independent Scientific Advisory Committee continues to make recommendations with regards to all aspects of cage and cage-free egg production, including housing, space allowance, beak
trimming, molting, and handling and transportation. Those recommendations become the requirements of United Egg Producers Certified companies.

**Commercial Housing Systems**

The first and most widely used type of housing for laying hens is the conventional cage system, also known as a battery cage. “In most non-European Union countries, including both developed and developing countries, more than 95% of commercial laying hens are housed in conventional cages” (Mench, Sumner, & Rosen-Molina, 2011, p. 230). According to that same article:

The main advantage of this system was that the hens and their eggs were separated from feces, thus decreasing the likelihood of transmission of soilborne parasites like coccidiosis and improving egg cleanliness. This system also proved to be economically efficient because it allowed automation of feeding, watering, and egg collection and improved the ability to control environmental variables important for hen health and production performance. Although cages were initially designed to hold only 1 hen, larger cages were eventually adopted that permitted groups of hens (typically about 6 to 10) to be housed together, further increasing economic efficiency as a result of the higher hen stocking densities that could be accommodated in each building (Mench et al., 2011, p. 230).

This style of housing system began receiving criticism in the 1990s, with opponents saying the battery cages imposed restrictions on the hen to practice her normal behaviors and movements, therefore making it detrimental for the animal’s welfare. In 1999, the European Union chose to ban the use of conventional cages by 2012 (Mench et al., 2011, p. 231). This is essentially what Proposition 2 did in California, banning the use of conventional cages by 2015.
Another type of housing for laying hens are non-cage systems, more commonly referred to as cage-free. This type of housing typically takes one of two forms: floor systems or aviaries, both of which can house thousands or tens of thousands of hens (Mench et al., 2011, p. 231). Floor systems allow the birds to be housed on the floor of a building as opposed to in cages. The building has nest boxes where the hens can lay their eggs and often they are equipped with automatic egg collection systems (Mench et al., 2011, p. 231). The aviary system is similar to the floor system but it makes use of the height of the building by having multi-tiered platforms (Mench et al., 2011, p. 232). Aviaries enable hens to be kept at higher stocking densities than floor systems, making them more economically efficient (Mench et al., 2011, p. 232). Hens housed in cage-free systems can also be given access to the outdoors.

The final style of housing systems used in egg production is furnished cages, which are also referred to as enriched or modified cages, or enriched colony systems. Furnished cages are similar to conventional cages but contain several amenities for the hens, including perches, nesting areas, and material that is designed to facilitate foraging and dustbathing behavior (Mench et al., 2011, p. 232). Within the category of furnished cages there are numerous variants, depending on the enrichment features and the number of hens the cage can hold.

Much research has been done to determine which style of housing is better for the safety and quality of eggs. In an article from the Poultry Science Journal, Holt et al. stated:

The current white paper attempted to provide insight into how changing the US egg industry from one that houses its hens in conventional laying cages to furnished cages, aviaries, or a cage-free system affects the safety and quality of eggs produced in these different environments. There is no general consensus demonstrating the superiority of
one housing situation over another regarding food safety and egg quality (Holt et al., 2011, p. 259).

There has also been research to determine which housing system is better for the welfare of the hens. Hens can experience stress no matter the housing type and not one housing option ranks high on all welfare parameters (Lay, 2011, p. 289).

Management of each system has a profound effect on the welfare of the birds in that system; thus, even a housing system that is considered to be superior relative to hen welfare can have a negative effect on welfare if poorly managed. The right combination of housing design, breed, rearing conditions, and management is essential to optimize hen welfare and productivity (Lay, 2011, p. 289).

Therefore, it is nearly impossible to choose one style of commercial housing systems as being better for food safety, egg quality, and general hen welfare.

**Farmers Markets**

Over the past decade, local farmers markets have become increasingly popular with many consumers becoming concerned about buying produce that is local and fresh. According to Lydia Zepeda, “They are a source of income for farmers, increase economic activity in communities, and provide consumers with products they view as fresher and of higher quality” (Zepeda, 2009). In order to effectively communicate to the public at farmers markets and plan and education and outreach campaign, it is important to understand who is shopping there, what their characteristics are, and what their motivations are (Zepeda, 2009). Through the data collected from a sample of United States food shoppers who have access to farmers markets (FM), Zepeda (2009) was able to determine the following:
This model confirms that women food shoppers are significantly more likely to patronize FMs than male food shoppers, but it rejects the hypotheses that education, age or income affects the probability of patronizing FMs. While economic variables such as income and food expenditures have no significant impact on the probability of shopping at a FM, attitudes about the importance of food cost does. This implies that economic priorities or perceptions play a greater role than actual economic constraints in determining whether one shops at FMs. In other words, it is not the ability to pay, but the willingness to pay for fresh, local food that is the chief economic constraint.

Zepeda (2009) goes on to mention that enjoyment and frequency of cooking, the presence of another adult and being religious are lifestyle variables that have significant impacts on a person’s choice to shop at a farmers market. Zepeda concludes with “The implication for FMs is that emphasizing freshness, the environment, health, nutrition and support of farmers will certainly be a message that resonates with their existing customers” (Zepeda 2009).

**Educating the Public**

There are many difficulties when it comes to communicating to the general public, especially when trying to communicate about agriculture and the animal industry. It is important as a communicator to know who the audience is in order to be effective. According to Grahame John Coleman, education strategies related to animal welfare issues depend on the target audience and the desired result (Coleman, 2010, p. 74). Issues surrounding animal welfare are becoming more prominent in media as animal rights groups, such as People for the Ethical Treatment of Animals (PETA) and the Humane Society of the United States (HSUS) initiate campaigns against the industry, a particular practice, or some event that adversely portrays the
entire industry (Coleman, 2010, p. 74). To preface his article about educating the public, Coleman writes:

*Education* refers to the process of imparting knowledge, and *persuasion* involves convincing another person. By implication, persuasion entails the imparting of a point of view rather than facts alone. The animal-welfare debate needs to be as well informed as possible, so the nature of the communication, the audience to whom it is directed, and the likely outcome of the communication all need to be addressed (Coleman, 2010, p. 74).

Once a person becomes well informed about the industry, it is important to determine how to go about changing the attitude of a particular group. The process of attitude changing and the effect a message has involves three factors: the source of the information, the traits of the person receiving the message, and the characteristics of the message being delivered (Coleman, 2010, p. 77). In conclusion, Coleman writes, “Therefore, there is a need to ensure that the community is well informed because community views affect decision makers at the political, regulatory, and retail levels, with considerable consequences for all. The process of informing the community necessarily involves changing beliefs and, to this extent, involves persuasion” (Coleman, 2010, p. 80).
Methods and Materials

In an effort to effectively plan and implement this education and outreach campaign for J.S. West, a five-step process was used.

1. Gather Information

   - In order to get an understanding of the topic, several sources of information were used. First, a basic understanding of the egg industry and poultry management were acquired through taking the Introduction to Poultry Management (ASCI 225) class at California Polytechnic State University, San Luis Obispo with Dr. Bob Spiller. Next, research was conducted on the internet to get a more detailed understanding of certain aspects of the industry. This research included information on industry standards, regulations, and guidelines, as well as detailed research on different types of housing systems for laying hens and animal welfare concerns. Finally, once the internship at J.S. West began, several days were spent at the ranches, in the barns, and at the egg processing facilities. This time allowed for a hands-on approach to learning about all the aspects of poultry management. Time was spent with ranch and production managers, where knowledge was gained and questions were answered. Between these three sources of information collection, a broad knowledge of the egg industry was gained.
2. *Gather Public Perception*

- Before creating a presentation to be used in a school setting, it was important that perception was gauged in a public setting to gain an understanding of existing knowledge that the general public regarding the egg industry and how eggs are produced. Using J.S. West’s replica of the new enriched colony housing system as a display, time was spent at multiple farmers market and fairs as a way to interact with the public, tell them about the egg industry, but most importantly, to ask industry related questions to gauge their understanding and existing knowledge. Throughout the span of approximately two months, time was spent at the Mother Lode Fair and the Stanislaus County Fair, as well as the Ripon Farmers Market, Modesto Certified Farmers Market, Oakdale Certified Farmers Market, Turlock Farmers Market, Riverbank Farmers Market, and Manteca Farmers Market.

3. *Presentation Development*

- Once information was gathered and public perception was gauged, the presentation, to be used as an outreach and educational tool in a school setting for J.S. West, was developed. In order to create an effective presentation, a PowerPoint was used. The PowerPoint (see Appendix A), which is 23 slides in length, a video, and J.S. West’s enriched colony enclosure replica, were all used to create a 50-minute presentation. Within the PowerPoint, there are multiple slides designed as a direct result of the previous step, gathering public perception. During farmers markets and fairs, there were several recurring misconceptions that people had regarding egg production. These facts were
scattered throughout the presentation on “Interesting Facts” slides to not only be fun and interesting, but also to help clear up those misconceptions that the students may have as well.

4. Survey

- In order to gauge the success of the presentation, a survey was developed to pass out to the students after the presentation was completed. This survey (see Appendix B) had multiple kinds of questions, ranging from true/false to multiple-choice, to scale, to open-ended. All questions were selected for a specific purpose and were meant to get certain information from the students.

5. Analyze Results

- Once the students completed the surveys, the surveys were collected. Upon collection, the surveys were analyzed, entered into an Excel spreadsheet, and graphs were created (see Appendix C). The surveys were analyzed by splitting them up by school, entering the data into the Excel spreadsheet, and then the data was transferred into graph form for clear understanding.

Population

In order to evaluate the presentation that was given to meet the objectives of this project, surveys were given out to those students who were present during the presentations. The first step to determining the population was figuring out where the presentations were going to be given. Once the presentation was developed, schools were contacted to set up presentation dates and times. The first school selected was Enochs High School in Modesto, CA. The teacher of the Food Science classes at Enochs is a friend of Jill Benson, Senior VP at J.S. West. Jill contacted the teacher at Enochs and asked if she would be interested in having a presentation for
her classes regarding eggs and how they are produced. Once she agreed, contact was made and a
date and time for the presentation were set up. The second school selected was Modesto Junior
College, also in Modesto, CA. Two professors, one in poultry science and one in animal science,
were contacted and asked if they’d be interested in having a presentation for their classes. Both
agreed so dates and times were set up to give the presentation to an Introduction to Animal
Science class and an Avian Practices class. The final school that received the presentation was
Sierra High School in Manteca, CA. One of the agriculture teachers at this school is the wife of
J.S. West’s feed mill manager. She asked her husband if someone would be interested in giving
a presentation to her Agriculture Science classes. Once contact was made, a date and time were
selected.

At Enoch High School, the first school to receive the presentation, a 50-minute
presentation was given to five different classes, four of which were general Food Science and
one was Advanced Food Science. These classes had varied students, from freshmen to seniors. From these five classes, 100 surveys were completed and analyzed. Modesto Junior College was
the second school to receive the presentation. The presentation was given to an Avian Practices
class where 15 surveys were completed and analyzed and an Introduction to Animal Science
class where 53 surveys were completed and analyzed. These classes also had varied student
ages, mainly focused on college freshmen and sophomores. The last school to receive the
presentation was Sierra High School. Here, the presentation was given to two Agriculture
Science classes, which are made up of mainly high school freshmen. Sierra High School had 51
surveys completed and analyzed, bringing the total number of completed surveys to 219.
**Instrumentation**

The surveys, (see Appendix B) which were given as a way to gain feedback regarding the presentation, were written with very specific objectives in mind. As an overall goal, the surveys were written and administered as a way to gauge the attention, retention, and perception of the audiences. The first eight questions of the survey were written in true/false format. The questions were specific to the information that was presented and were meant to gauge whether the audience was paying attention during the presentation and whether they retained the information. The next two questions, numbers nine and ten, were meant to serve as a way to determine their interest level in the topic. Question nine asked about the interest level prior to the presentation and question ten asked about the interest level after the presentation. The options participants could choose from were very interested, interested, somewhat interest, not interested, and neutral. Question 11 was a multiple choice question meant to gauge whether the audience gained a better understanding of the topic. The options were “I have a much better understanding,” “I have a better understanding,” I have a somewhat better understanding,” “I don’t have a better understanding,” and neutral. The last two multiple choice questions had to deal with the increased knowledge of the audience on specific topics. Question 12 asked if the audience had a better understanding of how eggs get from farm to table and where eggs come from, and question 13 asked if they had a better understanding of the way farmers treat their animals. The options for them to select were yes, somewhat, no, and neutral.

The next two questions, numbers 14 and 15, were scale/rating questions. These questions had to deal with the actual presentation, specifically how much they learned from it and if they enjoyed it. They were asked to, on a scale from 1 to 10, with 1 being the least and 10 being the most, rate how much they learned from the presentation and how much they enjoyed it. The last
five questions of the survey were the open-ended questions. These were meant to give the audience the opportunity to answer questions in their own words. Question 16 had to deal with animal welfare perception and asked, “How, if at all, has your thinking about farmers and animal welfare changed?” Questions 17 through 20 mostly dealt with the presentation and were meant for them to give feedback about what they liked and what could be improved. Specifically, question 17 asked about their favorite part, question 18 asked what they found most interesting, question 19 asked what could have been added to make it more interesting or relevant, and the final question asked for any additional comments or suggestions.

Data Collection

In order to collect the data from the survey, the surveys were administered to the students who served as the audience for the presentation. At Enochs High School and Modesto Junior College, the teachers administered the surveys. The presenter administered the survey at Sierra High School. The surveys were filled out in class by the students and collected by the teacher or presenter. At Enochs High School, the surveys were given exactly two weeks after the presentation. At Modesto Junior College, the data was collected one week after the presentation and at Sierra High School, the surveys were administered immediately after the presentation. After the data was collected from the surveys, it was analyzed as detailed below.

Data Analysis

Once the data was collected, methods were put in place on how to handle and interpret all data collected. First, the data was interpreted using graphs. Once the raw data was entered into an Excel spreadsheet separated by school, it was then compiled to create an overall database. Then, the data was put into graph form to make it easier to interpret. The first eight true/false questions were graphed using a bar graph. Questions nine and ten, dealing with the interest level
before and after the presentation, were graphed together using a line graph so the shift in interest level could be seen as a visual comparison by line. Question 11 was presented using a bar graph, while questions 12 and 13 were both presented using pie charts. Finally, questions 14 and 15, which were the scale/rating questions, were presented together using a bar graph. The written responses from the open-ended questions 16 through 20 were not presented in any particular way, besides the actual surveys the students completed being available to read.

Once the data was analyzed, criteria were set to determine whether or not the objectives of the project were met. Those criteria dealt with specific questions on the survey that directly correlated to the stated objectives. The specific questions that were used from the survey were questions one through thirteen. All these questions were meant to gauge whether or not the audience gained more knowledge or a better understanding of the topic, being the egg industry, how eggs are produced, and animal welfare issues.
Chapter Four-Results

After conducting presentations at the four different schools and having surveys completed by the students who heard the presentation, all 219 surveys were collected, analyzed, and interpreted. The results led to interpretation and analysis regarding whether the presentation adequately met the objectives of the project.

**Results**

Below are the results for the surveys given, broken up by section and then by individual questions. All results can be seen in graph form in Appendix C.

The first eight questions of the survey were in true/false format. The questions were specific to the information that was presented and were meant to gauge whether the audience was paying attention during the presentation and whether they retained the information.

- **Question 1:** Brown eggs are healthier than white eggs.
  - The correct answer to this question is false. Of 219 responses, 197 (90%) of the responses were correct. 22 (10%) of the responses were incorrect.

- **Question 2:** Most eggs are laid in the morning.
  - The correct answer to this question is true. Of 219 responses, 173 (79%) of the responses were correct. 46 (21%) of the responses were incorrect.

- **Question 3:** It takes 24–72 hours for an egg to get to the grocery store from the time it’s laid.
  - The correct answer to this question is true. Of 219 responses, 210 (95.9%) of the responses were correct. 9 (4.1%) of the responses were incorrect.

- **Question 4:** A chicken lays an egg at least every 24 hours.
• The correct answer to this question is false. Of 219 responses, 52 (23.7%) of the responses were correct. 167 (76.3%) of the responses were incorrect.

• Question 5: A blood spot in the yolk means the egg is fertile.
  o The correct answer to this question is false. Of 219 responses, 186 (84.9%) of the responses were correct. 33 (15.1%) of the responses were incorrect.

• Question 6: The housing system the hen is raised in directly affects the nutritional value of the egg.
  o The correct answer to this question is false. Of 219 responses, 153 (69.9%) of the responses were correct. 66 (30.1%) of the responses were incorrect.

• Question 7: In California, we are only allowed to sell Grade AA eggs.
  o The correct answer to this question is true. Of 219 responses, 190 (86.8%) of the responses were correct. 29 (13.2%) of the responses were incorrect.

• Question 8: Egg prices are expected to increase by at least $0.20 per dozen as a result of Proposition 2.
  o The correct answer to this question is true. Of 219 responses, 187 (85.4%) of the responses were correct. 32 (14.6%) of the responses were incorrect.

The next two questions, numbers nine and ten, were meant to serve as a way to determine audience interest level in the topic. Question nine asked about the interest level prior to the presentation and question ten asked about the interest level after the presentation. The options participants could choose from were very interested, interested, somewhat interested, not interested, and neutral.

• Question 9: What was your overall interest level in the topic prior to the presentation?
• Of the 219 responses, 39 (17.8%) were “Very Interested,” 65 (29.7%) were “Interested,” 60 (27.4%) were “Somewhat Interested,” 27 (12.3%) were “Not Interested,” and 28 (12.8%) were “Neutral.”

• Question 10: What is your overall interest level in the topic after the presentation?
  o Of the 219 responses, 52 (23.7%) were “Very Interested,” 92 (42%) were “Interested,” 47 (21.5%) were “Somewhat Interested,” 12 (5.5%) were “Not Interested,” and 16 (7.3%) were “Neutral.”

Question 11 was a multiple choice question meant to gauge whether the audience gained a better understanding of the topic. The options were “I have a much better understanding,” “I have a better understanding,” “I have a somewhat better understanding,” “I don’t have a better understanding,” and neutral.

• Question 11: What is your level of understand of the topic after the presentation compared to before?
  o Of the 219 responses, 106 (48.4%) had a “Much better understanding,” 84 (38.4%) had a “Better understanding,” 18 (8.2%) had a “Somewhat better understanding,” 2 (0.9%) “Don’t have a better understanding,” and 9 (4.1%) were “Neutral.”

The last two multiple-choice questions had to deal with the increased knowledge of the audience on specific topics. Question 12 asked if the audience had a better understanding of how eggs get from farm to table and where eggs come from, and question 13 asked if they had a better understanding of the way farmers treat their animals. The options for respondents to select were yes, somewhat, no, and neutral.
• Question 12: As a consumer, do you feel you better understand how eggs get from the farm to table and where eggs come from?
  o Of the 219 responses, 178 (81.3%) said “Yes,” 29 (13.2%) said “Somewhat,” 3 (1.4%) said “No”, and 9 (4.1%) were “Neutral.”
• Question 13: Do you feel you have a better understanding of the way egg farmers treat their animals?
  o Of the 219 responses, 175 (79.9%) said “Yes,” 29 (13.3%) said “Somewhat,” 4 (1.8%) said “No”, and 11 (5%) were “Neutral.”

The next two questions, numbers 14 and 15, were scale/rating questions. These questions had to deal with the actual presentation, specifically how much they learned from it and if they enjoyed it. Respondents were asked to, on a scale from 1 to 10, with 1 being the least and 10 being the most, rate how much they learned from the presentation and how much they enjoyed it.
• Question 14: On a scale from 1 to 10, with 1 being the least and 10 being the most, how much did you learn from the presentation?
  o Of the 219 responses, 66 (30.1%) rated it a “10,” 29 (13.2%) rated it a “9,” 56 (25.6%) rated it an “8,” 32 (14.6%) rated it a “7,” 16 (7.3%) rated it a “6,” 17 (7.8%) rated it a “5,” 1 (0.5%) rated it a “4,” 2 (0.9%) rated it a “3,” 0 (0%) rated it a “2,” and 0 (0%) rated it a “1.”
• Question 15: On a scale from 1 to 10, with 1 being the least and 10 being the most, how much did you enjoy the presentation?
  o Of the 219 responses, 64 (29.2%) rated it a “10,” 29 (13.3%) rated it a “9,” 59 (26.9%) rated it an “8,” 27 (12.3%) rated it a “7,” 13 (5.9%) rated it a “6,” 16
(7.3%) rated it a “5,” 6 (2.7%) rated it a “4,” 1 (0.5%) rated it a “3,” 1 (0.5%) rated it a “2,” and 3 (1.4%) rated it a “1.”

The last five questions of the survey were open-ended questions. These were meant to give the audience the opportunity to answer questions in their own words. Question 16 dealt with animal welfare perception. Questions 17 through 20 mostly dealt with the presentation and were meant for respondents to give feedback about what they liked and what could be improved. Specifically, question 17 asked about their favorite part, question 18 asked what they found most interesting, question 19 asked what could have been added to make it more interesting or relevant, and the final question asked for any additional comments or suggestions. These written responses were not presented in any particular way, besides being available to read on the actual surveys the students completed.

- Question 16: How, if at all, has your thinking about farmers and animal welfare changed?
- Question 17: What was your favorite part of the presentation?
- Question 18: What was the most interesting thing you learned?
- Question 19: What could have been added to the presentation to make it more interesting or relevant to you?
- Question 20: Any additional comments or suggestions?

**Summary of Results**

Based on the above results, it appears the campaign that was developed and implemented in a school setting was successful. As previously stated, the criteria set up to determine whether the objectives of the project were met dealt with specific questions on the survey that directly correlated to the stated objectives. The questions chosen to serve as criteria were questions one
through thirteen. As an overall summarization of the results from those thirteen questions, a majority of the respondents seemed to have experienced an increase in knowledge, interest, and understanding of the topic presented.

One of the stated objectives was to “Increase students’ knowledge of egg production and issues affecting the egg industry.” Questions one through eight were used as criteria for this objective. All but one of the questions were answered correctly by a majority (over 50%) of the respondents. There was one question, question four, that a majority of the respondents answered incorrectly. Another stated objective was to “Increase students’ interest level in the topic.” Questions nine and ten were used as criteria for this objective. Based on the responses of the participants, there was an increase in students’ interest level of the topic and a decrease in the number of students who were not interested in the topic. “Increase students’ understanding of the topic” was another one of the stated objectives. The criteria for this objective was question 11. Based on the responses, there were only two participants who reported not having a better understanding, while 208 of the 219 reported at least having a somewhat better understanding and nine choosing to answer “neutral.” The next stated objective was to “Increase students’ knowledge of how eggs get from farm to table and where eggs come from.” This objective was evaluated using question 12 was the criteria. Of all 219 responses, only three participants responded that they didn’t have a better understanding, while 94.5% of the respondents said they better understood or somewhat better understood how eggs get from the farm to table and where eggs come from. The final objective was to “Increase students’ understanding of the way egg farmers treat their animals.” Question 13 served as the criteria for this objective, and 204 of the 219 respondents reported having a better or somewhat better understanding of the how egg farmers treat their animals while only four students said they didn’t have a better understanding.
The results of the surveys were directly related to whether or not the objectives of the project were met. Based on the results presented, the objectives were met; an outreach and education campaign was developed and implemented, the campaign was taken into a school setting, and students’ knowledge, interest, and understanding of the topic were all increased.

Discussion

The first eight questions of the survey were true/false and were meant to gauge whether the students were paying attention during the presentation and whether they retained important information. These questions were specific to information that was given and emphasized during the presentation. Seven of the eight questions that were asked on the survey were answered correctly by a majority of students. Although some of the questions, such as two and six, were answered correctly by a relatively small majority (79% and 69.9%, respectively), it is still positive that a majority of the students answered correctly. True/false questions can sometimes be difficult to answer because just one word can make them incorrect, and given the length of the presentation and the attention span of some students, it is understandable that some students answered some of the questions incorrectly. Only one question asked was answered incorrectly by a majority of the students. Question four, regarding how often a chicken lays an egg, was answered incorrectly by 76.3% of students. It seems this happened because of the way the question was worded and what information was actually presented to the students. Of the eight true/false questions asked, this is the one question that was probably the most confusing and easily misunderstood.

The next results to be discussed are from question nine and ten regarding the respondents’ interest level in the topic. These two questions were grouped together because they ask about the participants’ overall interest level in the topic prior to the presentation and after the
presentation. Overall, interest in the topic increased after the presentation, as was expected. The trend of the results shifted, with more students being “very interested” and “interested” and less students being “not interested” after the presentation as compared to before. When reviewing the surveys, it seemed that some students failed to read the entire question before answering, because there were quite a few respondents who indicated that they were more interested in the topic before the presentation than after.

Question 11 was similar to questions nine and ten, but gauged the participants’ understanding of the topic after the presentation as compared to before. The results for this question were positive, indicating that 208 of the 219 respondents had at least a somewhat better understanding of the topic after the presentation. Of those 208, more than half indicated having a much better understanding. While these numbers are very encouraging, the fact that only two respondents indicated not having a better understanding after the presentation was positive and proved the campaign was successful in helping to increase understanding of the topic for a large majority of the students.

The next two questions, numbers 12 and 13, dealt with students’ understanding of specific information discussed in the presentation. Question 12 was asked regarding the understanding level of how eggs get from the farm to table and where eggs come from. A large majority (81.3%) of respondents indicated that they did have a better understanding, while 13.2% of respondents indicated having a somewhat better understanding. This left only three students who indicated that they didn’t have a better understanding. Like question 11, this question was an indicator of how successful the presentation was in helping students better understand eggs and how they are moved from farm to table. Question 13 was asked regarding the understanding level of the way egg farmers treat their animals. This question is important to a lot of egg
farmers because one of the largest problems egg farmers face is misconception from consumers regarding the treatment of laying hens. Similar to question 12, only four participants indicated not having a better understanding, while 204 of the 219 respondents reported that they had a better or somewhat better understanding. This indicates the presentation was successful in teaching students that egg farmers really do care for the welfare of their animals and treat them in a humane way.

Results for questions 14 and 15 were asked more for the use of the presenter in moving forward and perfecting the campaign and presentation. A large majority of students fell on the upper half of the scale (from 6-10) with regards to how much they learned and how much they enjoyed the presentation. Of all the numbers on the scale from 1 to 10, the largest number of participants fell on 10 for both questions while the fewest fell on 2 for both questions (although question 14 also had zero respondents fall on 1). This indicates a majority of students felt they learned a lot from the presentation and also enjoyed it. Because there were a decent amount of students who fell in the middle of the scale, there are certainly things that can and should be changed to perfect the presentation and make it more enjoyable for the students.

Questions 16 through 20 were probably the most interesting because they were the open ended questions that gave students the chance to put their thoughts and feelings into their own words. While there were a decent amount of students who either didn’t answer these questions or answered them jokingly, a majority of students did take the time to put some thought and effort into their answers, especially question 16 which asked “How, if at all, has your thinking about farmers and animal welfare changed?” Questions 17 through 20 were asked strictly for the presenter’s use, to know what parts of the presentation went well, what could be changed to make it better, and allow the students to put any additional comments or suggestions.
There are several implications of this study that are important to identify and discuss. First, the results that were previously stated indicate this presentation was successful in meeting its objectives. This implies that this type of presentation, in which an individual goes into a school setting to give information regarding a particular subject, is very effective in increasing knowledge, interest, and understanding of a topic. It implies that engaging, interactive presentations are effective and a majority of students enjoy such presentations. Finally, this study implies that companies and organizations should consider such types of campaigns and presentations as were used in this study if they are trying to educate consumers, starting with some of the most impressionable consumers being school aged.
Chapter Five—Recommendations and Conclusions

Recommendations

Over the course of this project, several things were recognized that could be altered to better the project, even though the objectives of the project were met. The following recommendations were made and should be considered if doing this project again in the future.

1. Reword some survey questions.
   - Question 4: This question should be changed so it’s not as confusing and more straightforward. This recommendation is based on the fact that it was the only question a majority of students answered incorrectly, even though the information was clearly presented to all students during the presentation.
   - Questions 9 & 10: These questions should be altered to read “Prior to the presentation, what was your overall interest level in the topic?” and “After the presentation, what was your overall interest level in the topic?” These recommendations are based on responses on the surveys in which some students did not fully read the question before answering, indicating that they had more interest in the topic before the presentation.
   - Question 16: More clarification should be added to this question, maybe changing it to “How, if at all, has your perception about farmers and animal welfare changed?” and adding “If it hasn’t changed, is your perception positive or negative?” This recommendation is based on responses from some people indicating that their thinking hadn’t changed, but not indicating if their thinking was initially positive or negative regarding farmers and animal welfare.
2. Incorporate more interactive activities.
   - It is recommended that the presentation incorporate more interactive activities, such as actually looking at eggs with blood spots, double yolks, prominent chalazae, etc., and shortening the length of time spent presenting information and using more time to do activities that will further solidify students’ understanding of the topic.

3. Distribute surveys immediately after the presentation.
   - Instead of waiting days or even weeks before getting feedback from the students, it is recommended that the surveys be distributed immediately after the presentation or at least on the same day to get the most accurate feedback.

4. Better identify the survey sample.
   - When creating the survey, consider further identifying the survey sample and respondents by using descriptive questions at the end of the survey such as gender, age, whether they are from an agriculture background, and if they live in a rural versus urban area. This will help to further identify the survey respondents and add another level of consideration when analyzing the results.

5. Use a larger sample size.
   - Due to the scope of this project being relatively small, it is recommended that larger sample sizes be used in the future. This can be accomplished by giving the presentation to more groups to obtain more accurate results.

6. Create more specific presentations.
   - In addition to the presentation used in this study being an overview of several topics relating to the egg industry topics, it is recommended to create more
presentations that are focused on individual topics and go more in depth on a specific topic. This would allow teachers the opportunity to choose from several presentations based on their class needs, whether it is policy, husbandry, or other topics related to the industry.

7. J.S. West and Companies should continue to use the outreach and education campaign started through this project.

- Based on the success of this campaign and meeting the objectives laid out for this project, it is recommend that J.S. West and Companies continue using the campaign and presentation created. J.S. West owners and employees have full access to all campaign materials, including the presentation and surveys, and it is suggested they continue using the campaign to their benefit and to continue increasing knowledge, interest, and understanding of the egg industry.

Conclusions

Based on the results of this project, as gauged through surveys distributed to the students present for the presentation, this project was a success because it met the objectives set at the beginning of the project. As a result of the campaign and school presentation, students’ knowledge of egg production and issues affecting the egg industry, interest level in the topic, understanding of the topic, knowledge of how eggs get from farm to table and where eggs come from, and understanding of the way egg farmers treat their animals all increased.

Along with the results presented in the previous chapter that were measurable and directly correlated to the objectives, there was also feedback given in the form of responses to open ended questions on the survey that provided further insight into the students’ reactions of the presentation. Question 16 asked “How, if at all, has your thinking about farmers and animal
welfare changed?” and it provided the most insightful, though not measurable, answers from students regarding their perception of farmers and animal welfare, both of which were key parts of the presentation. Some of the positive responses to this question were:

- “My thinking about farmers and animal welfare remains the same. I have always believed the standards of animal welfare have been very high and farmers do the best they can to provide the best product possible.”
- “I definitely have a greater appreciation for how much farmers do in order for us to have food.”
- “I have learned that farmers are very careful with the eggs to make sure they are clean and safe to eat.”
- “Yes it has changed; I will definitely do more research than just believing ads on TV.”
- “It has made me more interested in learning more about agriculture.”

Some of the few, but most well stated negative responses indicated:

- “I am still skeptical about animals’ welfare due to the mass amount of videos circling in the media that reveal cruel treatment of chicks/chickens.”
- “I had a great understanding on the subject before the presentation, I voted yes on Prop. 2 and I believe I made the right choice.”

Though these are only a few of the 219 responses, they provide the most thorough and detailed responses to question 16, providing the most insight. Even though there were a few negative responses throughout the survey, the vast majority indicated that they learned a lot from the presentation, proving that the campaign, and this project, was a success. One student summed it up well in their answer to one of the open ended questions: “What you guys are doing is for a good cause, and you should keep doing it so people have a better understanding.”
References


Appendix A - Presentation Slides

**Eggs 101**

Katie Veenstra  
JS West

**JS West**  
1908-present
- Family owned and operated
- 3rd and 4th generations of West and Benson families now manage the business
- Diverse company and background
  - Been involved in everything from selling feed and furniture to having an ice-making plant and automobile sales & service station
- Close to 300 employees

**Go West with Confidence**

**California’s Egg Industry**
- California ranks 5th in egg production in the United States
- 19.4 million egg-laying hens in the state
- 4.9 billion eggs annually
  - JS West processes 1.2 million per day
- Majority of egg farms are family owned
- California is an egg deficit state
  - We import 1/3 of our needs

**Laying Hens**

- Brown Eggs
  - Chickens with red earlobes (Rhode Island Red, Plymouth Rock)

- White Eggs
  - Chickens with white earlobes (Leghorn)

**Did you know...**
- Hens lay about 260-270 eggs per year
- Most eggs are laid between 7am and noon

**Chick to Hen**

- Receive chicks at 1 day of age
  - Already have some vaccinations, beak treatment
- Raised in brooder house until about 17 weeks of age
  - Receive vaccinations, raised to age when ready to lay
- Moved to Lay House at about 17 weeks
  - Keep hens until about 85-90 weeks of age
  - Hens average 3.5 lbs body weight
"Egg Plant"

A yolk is released from the ovary and enters the oviduct.

A thick white layer of albumen is added around the yolk.

Water is added to the albumen to form a thin layer of white.

The egg is laid 20-28 hours after the yolk is released and the process starts again.

Blood spots don’t mean an egg is fertile.

A double yolk means two yolks were released.

What’s in an egg?

**CROSS-SECTION OF AN EGG**

**Shell**
- Major source of vitamins, minerals, and fats.

**Air Cell**
- Caused by contraction of egg contents as the egg cools; grows with age of eggs.

**Thick Albumen**
- Major source of protein.

**Yolk**
- Major source of nutrition.

Nutritional Value

- Excellent source of protein!
- They make you feel full!
- Nutrient dense—has everything a baby chick would need to grow and live.
- For 1 Large egg:
  - 70 Calories
  - **Vitamins**: Vitamins A, D, E, B12; Biotin, Choline, Folate, Niacin, Pantothenic Acid, Pyridoxine, Riboflavin, Thiamin
  - **Minerals**: Calcium, Copper, Iron, Magnesium, Manganese, Phosphorous, Potassium, Sodium, Sulfur, Zinc

Interesting Facts!

- The nutritional value of an egg is determined by the feed the hen eats, not the housing system the hen is raised in.
- Egg size correlates to the age of the bird—the older the bird the bigger the egg.
- An egg a day is OK!

Types of Production Systems
Farm to Table

Lay House
Processing Room
Refrigeration
Shipping
Retail Store

If an egg is fresh it will sink in a bowl of water.

Interesting Facts!

Be a smart consumer!

Common logos found on egg cartons

Proposition 2

Californians for SAFE Food
YES! ON PROP 2
STOP Animal Cruelty

Passed in Nov. 2008 by California voters with 63% "YES" vote
Takes effect on January 1, 2015

* Prohibits confinement of certain farm animals (including egg laying hens) in a manner that does not allow them to lie down, stand up, fully extend their limbs, and turn around freely

Field Trip!
**Conventional vs. Enriched Colony House**

<table>
<thead>
<tr>
<th>Conventional</th>
<th>Enriched Colony</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum 67 square inches per hen</td>
<td>124 square inches per hen</td>
</tr>
<tr>
<td>Small group of hens</td>
<td>Colony of 60 hens</td>
</tr>
<tr>
<td>Constant access to fresh feed and water</td>
<td>Constant access to fresh feed and water</td>
</tr>
<tr>
<td>Egg belts</td>
<td>Egg belts</td>
</tr>
<tr>
<td>Manure storage</td>
<td>Manure belts</td>
</tr>
<tr>
<td></td>
<td>Enrichments features</td>
</tr>
</tbody>
</table>

**Assembly Bill 1437**
- Requires that all shelled eggs sold for human consumption in California comply with the provisions of Proposition 2.
- Signed by former Gov. Schwarzenegger in July of 2010

**United Egg Producers**
- UEP & HSUS are working together toward the phase in of new federal legislation, increasing the space per bird for all hens involved in US egg production

- Proposed legislation would...
  - Require conventional cages be replaced with enriched housing systems ($4 billion investment)
  - Mandate labeling on all egg cartons
  - Prohibit feed or water withholding molting
  - Require standards approved by the American Veterinary Medical Association for euthanasia
  - Prohibit excessive ammonia levels in hen houses
  - Prohibit the sale of eggs and egg products in the US that don’t meet requirements

**What now?**
- Need clarification!
- Egg prices expected to increase by at least $0.20 per dozen
- Doing more with less
- Consumer choice

Looking to the future...

[www.jwost.com](http://www.jwost.com)

**Questions?**
Appendix B-Sample Survey

Post-Presentation Survey for “Eggs 101”

True/False

1. _____ Brown eggs are healthier than white eggs.

2. _____ Most eggs are laid in the morning.

3. _____ It takes 24-72 hours for an egg to get to the grocery store from the time it’s laid.

4. _____ A chicken lays an egg at least every 24 hours.

5. _____ A blood spot in the yolk means the egg is fertile.

6. _____ The housing system the hen is raised in directly affects the nutritional value of the egg.

7. _____ In California, we are only allowed to sell Grade AA eggs.

8. _____ Egg prices are expected to increase by at least $0.20 per dozen as a result of Proposition 2.

Multiple Choice

9. What was your overall interest level in the topic prior to the presentation?
   a. Very Interested
   b. Interested
   c. Somewhat Interested
   d. Not Interested
   e. Neutral

10. What is your overall interest level in the topic after the presentation?
    a. Very Interested
    b. Interested
    c. Somewhat Interested
    d. Not Interested
    e. Neutral
11. What is your level of understanding of the topic after the presentation compared to before?
   a. I have a much better understanding.
   b. I have a better understanding.
   c. I have a somewhat better understanding.
   d. I don’t have a better understanding.
   e. Neutral

12. As a consumer, do you feel you better understand how eggs get from the farm to table and where eggs come from?
   a. Yes
   b. Somewhat
   c. No
   d. Neutral

13. Do you feel you have a better understanding of the way egg farmers treat their animals?
   a. Yes
   b. Somewhat
   c. No
   d. Neutral

**Scale/Rating**

14. _____ On a scale from 1 to 10, with 1 being the least and 10 being the most, how much did you learn from the presentation?

15. _____ On a scale from 1 to 10, with 1 being the least and 10 being the most, how much did you enjoy the presentation?

**Open Ended**

16. How, if at all, has your thinking about farmers and animal welfare changed?

17. What was your favorite part of the presentation?
18. What was the most interesting thing you learned?

19. What could have been added to the presentation to make it more interesting or relevant to you?

20. Any additional comments or suggestions?
Appendix C-Results

**Post-Survey Results**

**Question 1**: Brown eggs are healthier than white eggs. *(False)*

**Question 2**: Most eggs are laid in the morning. *(True)*

**Question 3**: It takes 24-72 hours for an egg to get to the grocery store from the time it’s laid. *(True)*

**Question 4**: A chicken lays an egg at least every 24 hours. *(False)*

**Question 5**: A blood spot in the yolk means the egg is fertile. *(False)*

**Question 6**: The housing system the hen is raised in directly affects the nutritional value of the egg. *(False)*

**Question 7**: In California, we are only allowed to sell Grade AA eggs. *(True)*

**Question 8**: Egg prices are expected to increase by at least $0.20 per dozen as a result of Proposition 2. *(True)*

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**Figure 1**: Questions 1-8

*Source: AGC 462 Project, 2012*
**Question 9:** What was your overall interest level in the topic prior to the presentation?

**Question 10:** What is your overall interest level in the topic after the presentation?

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**Figure 2: Questions 9 & 10**

Source: AGC 462 Project, 2012
Question 11: What is your level of understanding of the topic after the presentation compared to before?

a.) I have a much better understanding.
b.) I have a better understanding.
c.) I have a somewhat better understanding.
d.) I don’t have a better understanding.
e.) Neutral

Figure 3: Question 11
Source: AGC 426 Project, 2012
**Question 12:** As a consumer, do you feel you better understand how eggs get from the farm to table and where eggs come from?

- a.) Yes
- b.) Somewhat
- c.) No
- d.) Neutral

![Pie chart showing responses to Question 12](image)

Figure 4: Question 12
Source: AGC 426 Project, 2012
**Question 13:** Do you feel you have a better understanding of the way egg farmers treat their animals?

a.) Yes  
b.) Somewhat  
c.) No  
d.) Neutral

![Pie chart](image)

Figure 5: Question 13  
Source: AGC 426 Project, 2012
**Question 14:** On a scale from 1 to 10, with 1 being the least and 10 being the most, how much did you learn from the presentation?

**Question 15:** On a scale from 1 to 10, with 1 being the least and 10 being the most, how much did you enjoy the presentation?

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**Figure 6:** Questions 14 & 15  
Source: AGC 426 Project, 2012