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Gabrielle Bishop
Utah State University

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Retaining Ownership of Calves- Obendorf Farms
Gabby Bishop
Masters of Agribusiness
Utah State University

I. Abstract

Retaining Ownership is when a producer chooses to obtain ownership of their calves until they have reached a finished weight and are ready to be sent to slaughter. Cow-calf producers generally sell their calves at weaning time or within a few months of weaning. Every operation as their own way of doing things and sometimes change is hard to come by. Obendorf Farms wanted to evaluate, at what point in time would it be best to sell their 2020 calf crop? Four different scenarios were analyzed. The first scenario involved no change from previous years which, is selling their calves in December, a few months after they are weaned. The second scenario is selling their calves 30 days after weaning. The third scenario is retaining ownership of the calves by taking them to a feedlot and putting them on a slow feed program. The last scenario also includes retaining ownership of the calves but push the calves on feed. By doing this analysis owners at Obendorf Farms will be able to see which option gives them the best net income on their 2020 calf crop.

II. Introduction

Obendorf Farms is a third-generation farming operation located in Parma, Idaho. The Obendorf family first began farming when Ray Obendorf, 97 years old, planted his first onion field as a sophomore in high school. The first field ever planted by Obendorf consisted of half an acre, which grew to be much more than he ever imagined. By 1948, Ray Obendorf began growing hops, which is now the largest component of the operation.

Throughout the early 1980s, Ray began to transition the farm over to his son, Greg Obendorf. This tradition of passing the family business down each generation continues in the Obendorf family. In 2008 Greg passed the farm down to his two sons, Brock and Phil Obendorf. After Greg retired, the brothers decided to establish a new LLC, Brock and Phillip Obendorf Farms, LLC. Generation after generation, the farm has continued to expand and today is much more than just the half-acre of onions that started it all.

The Obendorf's farming operation now expands across a multitude of crops. Currently, the farm grows 570 acres of onions, 450 acres of wheat, 200 acres of seed corn, 200 acres of combine corn, a small blueberry operation, and 3,400 acres of hops. Even with this impressive farm portfolio, the Obendorf brothers wanted to continue to diversify and expand its operations. In 2011, they made the decision to purchase a cattle ranch in Jordan Valley, Oregon.

Initially, Greg Obendorf purchased the cattle ranch but wanting to continue the family tradition, he sold it to his sons, Brock and Phil. The brothers fully operate the ranch now, which produces a large calf crop and hay for the operation annually. The ranch consists of 400 irrigated sprinkler acres which provides the ranch with alfalfa hay that is sold to dairies in the Treasure Valley. Along with alfalfa hay, they farm 700 acres of grass hay which is used for feeding the

cows that reside on the ranch during the winter months. Growth plays an important role at Obendorf Farms.

The ranch has been increasing the number of cows they own by keeping the heifers born each year for replacements. Of those replacement heifers, 200 head are relocated to Baker City, Oregon. Currently, the ranch has 800 cows but the brothers hope to increase to 1,000 within the next couple of years. The ranch has the capacity to comfortably run 1,000 cows. Reaching the goal of 1,000 head of cattle will have the ranch running at full capacity, thus gaining the maximum productivity it has to offer the operation.

With such a variety of crops and diversified farming operation, they are able to market their crops in many different ways. One marketing method Obendorf Farms utilized was creating a DBA (Doing Business As) to expand their onion operation. The DBA is Obendorf Produce. This allowed for better name identification and clearly allowed consumers to distinguish between the operations. Through Obendorf Produce the farm now operates its own onion packing facility. They are responsible for selling and contracting their own onions. Currently, 70% of the onions grown on the farm are contracted. The remaining 30% is dealt with on a sale by sale basis. Along with the sale by sale basis, the farm utilizes brokers to meet the sale by sale needs. The feeder corn grown on the farm is sent to Boise Valley Feeders, along with the wheat. As for the seed corn, the farm contracts all of it 100% to Crookhams Seed Company. Blueberries are dealt with on a sale by sale basis, dealing mostly with Grasmick Produce, Charlies Produce, and Associated Food Stores. Hops, being the largest portion of the farm, are nearly 90% contracted through brokers. The contracts the farm has obtained for hops are multi-year contracts. Direct contracts without using a broker are fairly unique for the farm, but they do have one direct contract with Anheuser-Busch. Finally, the cattle in previous years have been sold using private treaty

contracts and video sales on Superior Livestock. Aside from marketing and selling, an operation of this size requires Obendorf Farms to look into labor demands.

Obendorf Farms has a high demand for labor, employing close to four hundred people during peak season. Hops, onions, seed corn, and hand-picking blueberries are extremely labor-intensive crops, so it takes an army to keep the farm going. In order to assist farming operations such as the Obendorfs, the Department of Labor has implemented a strenuous program, the H-2A program, designed to help minimize the labor shortage farmers experience every year. This program allows foreign nationals to temporarily enter the United States to fill seasonal agricultural jobs. Obendorf Farms adopted the H-2A program in 2015 to help keep up with the labor-intensive crops. Meeting labor needs is always a high risk the operation faces, however, it's not the only risk the farm faces on a daily basis.

A farming operation of this magnitude has to evaluate multiple risks. One of the key risks the farm faces is market volatility. Since onions and hops are the farm's most valuable crops, the farm needs to pay close attention to the market volatility, because the economy can pose a threat to the farm's profitability. In turn, this causes fluctuations in prices that may not always be in favor of the farmer. The management team also needs to evaluate the market volatility of retaining ownership of their weaned calves. This is yet another risk the Obendorfs evaluate on a daily basis.

In addition to market volatility and labor, another risk the farm faces is production risks. A lot of different factors cause production risks. When evaluating potential production risks, one has to analyze the weather such as excessive rainfall at harvest, drought, and freezing temperatures. The farm and ranch reside in an area where weather is highly unpredictable, therefore the Obendorfs constantly monitor the weather to weigh the risks.

Along with weather concerns, death loss is important to take into consideration. Retaining ownership of the calves by taking them into fats will increase the percentage of death loss. Price risk is always a factor that the Obendorf brothers have concerns about. Potential risks to their cash crops, hops, and onions, are the biggest concern for the brothers. Maximizing profits while evaluating the risk exposure involved is key to the Obendorfs having a successful operation.

A farm the size of Obendorf Farms, which is widely spread out, with many different components, oftentimes makes it easy to overlook the areas that are not as capital intensive. When it comes to improvements this is frequently the case with the ranch in Jordan Valley. Obendorf Farms would like to increase the value of their calves by taking them to a feedlot. By taking their calves to a feedlot they would be adding more value to their calves but this poses the question: does the value outweigh the risks that come along with it? There are a lot of components to take into consideration when taking your calves to a feedlot. Along with adding more value to their calves by holding an interest in them longer, they will also be able to add value to products that in previous years, had little to no value at all. A cost-benefit analysis will show the management team and owners at Obendorf Farms which option is better for them from a financial standpoint.

II. Literature Review

The article written by John Lawrence outlines what opportunities are to gain to retaining ownership of your calves, as well as looking into some difficulties that could potentially arise. Any business owner who possesses a commodity is always looking for ways to add value to their product in hopes of eventually increasing their cash flow. Research has identified different factors that go into retaining ownership of calves (Lawrence, 2005). There are different

opportunities that could be taken advantage of if the cow-calf producer were to retain ownership of their weaned calves, as opposed to selling right at weaning time. An overlooked advantage that most producers do not take into consideration is the genetic opportunities. Selling weaned calves never provide producers the most accurate picture of the opportunities that can be gained from the genetics they already have in their herd. Keeping calves longer will also show the producer which genetics are working in the operation, as well as which ones are not. In some operations, an advantage is adding value to other resources on the operation. This includes but is not limited to, labor, facilities, feed, and capital.

Another advantageous opportunity that can be captured is the increase in marketing abilities. Retaining ownership will allow the producer to be flexible when the calves are sold. This will make it so the operation can capture the best possible price for their animal. Looking at current markets by weight will show the management when the feeder cattle should be sold. This will also give the operation a variety of different types of animals that can be sold. Some could be sold at weaning, some as feeders, and others as fat cattle. This brings in the potential to increase cash flow. However, the process to gain additional cash flow may pose some challenges.

The first year of change will result in cash flow issues for the operation. Since the weaned calves will not be sold the operation will not be paid for these animals. The operation will also be spending more money on cash outflows because they will be required to purchase more feed. In most cases, a lender will need to be notified of this type of change. To make this type of change the article states that a lender needs to see the positive outcome. The article also talks about the different ways to retain ownership of calves. Whether it be feeding calves at home or in a commercial feedlot retaining ownership of calves makes an operation more

diversified. When deciding between the two a producer needs to evaluate which operation better suits the operation as a whole. In Obendorf's case, they will be utilizing an off the farm commercial feedlot.

The article highlights some different perks to using a commercial feedlot. Commercial feedlots already have the knowledge behind running a feedlot operation that the cow-calf producer just does not obtain. Many feedlots have nutritionists on hand that has analyzed feed and have figured out the best rate of gain for other animals on that operation. Along with nutritionist feedlots have marketing specialists who have figured out the best way to make the best profit. The essential technology that is needed to keep track of important numbers such as weight is already owned by the feedlot. Larger feedlot operations can take advantage of efficient pen sizes while keeping heifers and steers separate from one another.

To mitigate risk some feedlots, offer a shared risk program. One way to share risk is sharing ownership, this means that they share the ownership of the calf as well as the feed bill. The other way the article mentions is the feedlot could provide the yardage and feed while the cow-calf producer produces the calf. When revenue is collected the revenue is split in accordance with the percentage of what each operation contributed.

The issue of retaining ownership of calves has been deeply analyzed by researchers, Ernest E. Davis, James McGrann, and James Mintert. They discuss some of the key topics for when a producer is considering making a change such as retaining ownership in the operation (Davis & McGrann & Mintert, n.d). The article begins by outlining the background of market integration and how it can be not only beneficial to the producer but the cattle as well. Retaining ownership of these cattle will cause less stress on the animal because less shipping will be required. This goes hand in hand with saving on shipping costs for the producer. By retaining

ownership cattle ranchers are spreading out their risk but also incurring more marketing and production risk. Producers need to carefully market and contract their cattle, if this is not done carefully it can result in lost profits for the operation. The article explains that retaining ownership of calves will decrease cash inflows and increase cash outflows for at least the first year. The operation needs to have the right capital in place in order to be successful in such a change.

Additionally, the article talks about herd size, it states that many cattle producers do not have enough cattle to take on this new venture. Typically, 100 head of calves is required for the feedlot, but a lot of times producers can team up with other operations to meet that minimum requirement. In Obendorf's case, this would not be a problem considering they have an 800 head operation.

The authors state that the first decision point is knowing one's production costs. The most important piece of information lays at one's fingertips. To accurately project profits one needs to know their production, which a lot of the time will deter producers from changing their ways because they have not figured out their costs.

The article explains how cattle prices can be somewhat tricky. As the weight of a calf increases the price will tend to decrease due to prices in price per pound. With the change, producers will need to become accustomed to the price they are receiving for heavier calves. Cattle producers need to have a good understanding of current market prices, trends, and cycles. Estimating supply and demand is simple yet one of the most effective ways to determine success. Knowing the industry as a whole is vital, this means also knowing consumer preferences, which are key to cattlemen's success. This also means knowing the background on the competition, for

beef, this could be chicken, pork, or plant-based meat products. There are numerous factors to consider when deciding to retain ownership of an operation.

Genetics play a huge role in any operation. Powerful genetics provide the operation with the best weight gaining, marbling score, etc. A majority of the time, cow-calf producers do not get to reach the full potential of the genetics on their operation because they are sold as calves. In an interview with Tim Adams, Wyatt Bechtel and Adams discuss Adam's operation. He purchased his first bull in 1991 to breed 20 head of mother cows (Bechtel, 2017). Now nearly 30 years later Adam knows he is purchasing high-quality genetics but sees no difference in outcome at the sale barn. Adam's colleagues in the cattle industry encouraged him to take his calves to a feedlot to see a better outcome with his higher quality genetics. Adam states, "If you truly want to get what they are worth and know what you've got, then you need to feed your own calves out". This not only gives you better prices but also gives you a better idea of what to look for in the next breeding season from a genetics standpoint. Having a feedlot that provides an operation with carcass data is important. A change in sires can play a huge role in what quality grade one's feeder cattle will receive. This is all information that comes back from the feedlot, which helps operators with decision making on their cow-calf operation.

Pricing of calves is single-handedly the most important and most risky portion of any cattle operation. Researchers have discovered that goods related to the production of cattle have an effect on prices (Comerford, 2014). This article explains that calf prices are in correlation with feed prices. Feed costs are an important influencer of calf prices. When corn prices are high the demand and price of cattle decrease. When this occurs feedlots will typically increase their prices of feed by selling the cow-calf producer feed at an increased price. Thus, resulting in higher profit-risk which will fall onto the owner of the calf.

Another important factor the article points out is that the cow-calf operation must have a good preconditioning program. If calves are sick or get sick during their time at the feedlot it will result in lower weight gain, lower feed efficiency, and quality grades will suffer. If calves are at the feedlot getting sick, then the owners will surely see an influx of vet bills. A good preconditioning program can help increase the price of the cattle and avoid any extra costs. Quality grades, feed efficiencies, and weight gains are all reliant upon the preconditioning program that an operation has put into place. Death loss percentage must also be taken into consideration. With a good precondition program put into place, this has the opportunity to decrease death loss for calves as they move into the feedlot stage of their lives.

In order to generate money, a business owner needs to evaluate and incur risk. Choosing to invest more money into calves to make more money, take careful consideration, and evaluation. Choosing which commercial feedlot to feed calves for your operations is one of the biggest choices in the change. Researchers talk about the most important decisions and aspects of the current situation and which parts of the change are the most important to consider (Lardy, 2018). One of the first things to take into considerations when choosing between feedlots is what type of feed rations, they are using. Typically, this is done by a nutritionist that the feedlot has hired.

Depending on the current financial situation your operation has financing may be a good inquiry to ask about. Financing can help an operation with cash flow. During an operation's first year of retaining ownership, there is no cash inflow and an increase in cash outflow. Typically, there are interest rates on feedlots, which is the current going rate plus one or two more percent. The best way to calculate the interest on the feed is by taking how much you currently owe on feed times that by the interest rate and divide it by two. The producer needs to divide it by two because feed bills are typically sent out every two weeks.

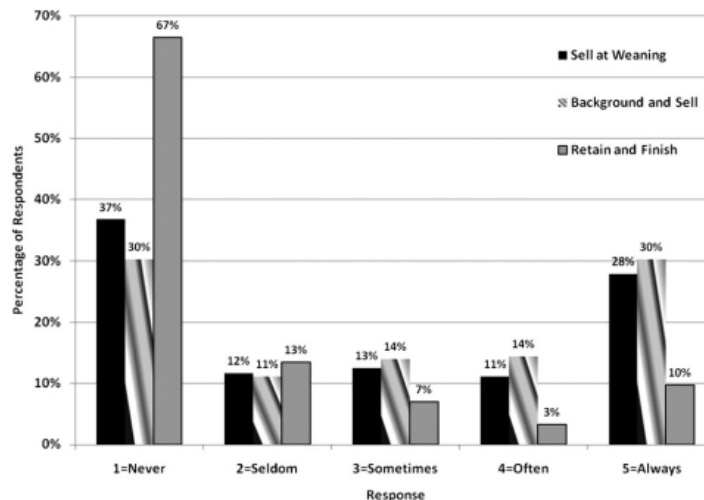
Marketing is another important factor to consider when choosing a feedlot. Asking the feedlot manager important keys such as, how many packer bids does the feedlot receive weekly, do you sell live beef, and does the feedlot have the opportunity for contracts, formula pricing, or access to grids? This can be the make it or break it for your operation which is essentially the last step, which is why it is so important.

Depending upon which feedlot you go with there are different options where fees come into play. Some feedlots may just charge a yardage fee which on average can run anywhere between 35 and 45 cents a day. If this is the case, then there is not a feed markup. Another option is a yardage fee plus a feed markup. This means the yardage cost is less which is about 5 cents a day plus the feed markup. Lastly, a feedlot may also charge a feed markup. The feed markup is how most commercial feedlots make money.

In order to feed cattle successfully sorting cattle into pens depending upon weight, age, sex, and body type are important. Feeding cattle by those characteristics will result in more uniform quality and yield grades. Uniform quality and yield grades are important and are correlated to the price you will receive for your animal.

Steer calves are prominently sold at three different stages in their life. Weaning, after backgrounding, and after they are fed to a finished weight. Producers can choose one of these stages or a mixture of all stages (Pope, Schroeder, Langemeirer, Herbel, 2011). There are a lot of different factors that play a role in these decisions. Prices and input costs being the major impact that affects the decision. A study was conducted, on a sample of Kansas cattle producers, that shows how often cow-calf producers choose which stage of maturity they are going to take their calves to. Five options were given for each of the three stages. The five options include, never, seldom, sometimes, often, and always. Below is a graph of the corresponding answers they

received from producers on which stage of maturity they take their steer calves to. As shown in the graph 67% of cow-calf producers choose not to retain ownership of their calves.



Risk tolerance plays a huge role in a producer's decision to sell their calves. Relating to the first graph and set of questions they asked producers, they also asked how risk-tolerant the cow-calf producer is to find a correlation between the two answers. After the study was conducted the results showed that more risk-tolerant cattle producers are more inclined to keep their calves up until they are at a finishing weight. The risk-tolerant producers sell their calves at weaning only 15% of the time. 60% of producers who consider themselves more risk-averse will sell their calves at weaning *often or always* at the time of weaning. Regarding backgrounding calves risk tolerance does not impact a producer's decision whether to background or sell the calves. A key take away that this study revealed is only 13% of Kansas cattle producers retain ownership of their steer calves until a finishing weight.

III. Methodology

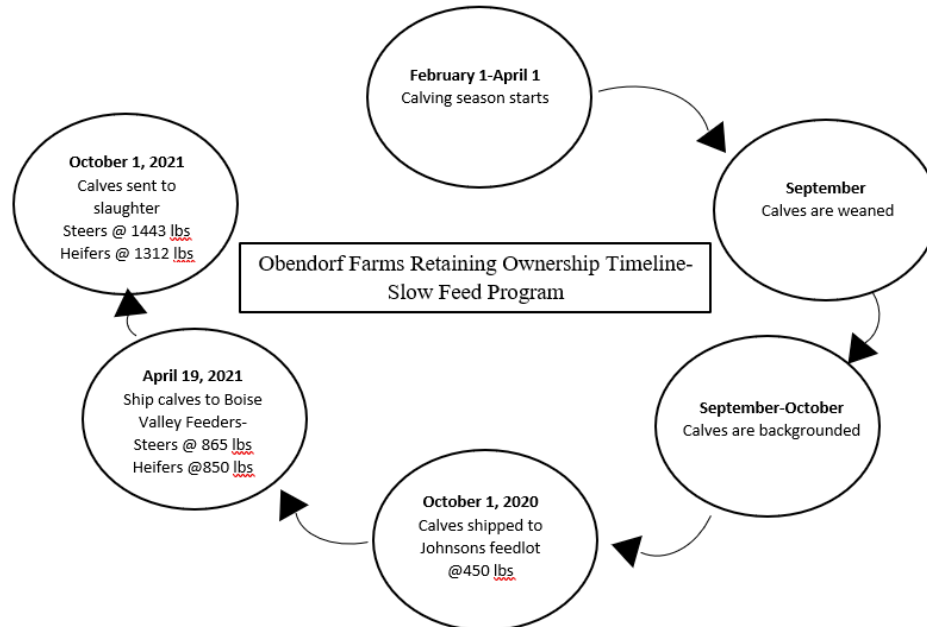
With cattle operations, there are many different scenarios that can take place. Cattle producers have the opportunity to determine at which weight they are going to sell their calves.

Depending on market trends and prices they will want to take advantage of the best price they can receive for these calves. In order to determine which scenario is the best option for Obendorf Farms multiple analyses needed to be taken into consideration.

The first analysis to take place is as if nothing were to change at the ranch. The ranch would continue to sell their calves in December. Steers typically weigh approximately 700 pounds. The heifers will sell at approximately 635 pounds. This will look identical to the three-year average that was already done. In order to compare the amount, the operation would receive for the set of calves that would be taken to fats, I did the analysis for 2020. The actual budget numbers from the ranch were used from January through July. To complete the year the three-year average was used. A few adjustments were made based on information the owner knows about the upcoming months. The price received for these calves was provided by a representative from Treasure Valley Livestock. This will show the owner and management how much net income they would have received for these calves versus all the other scenarios.

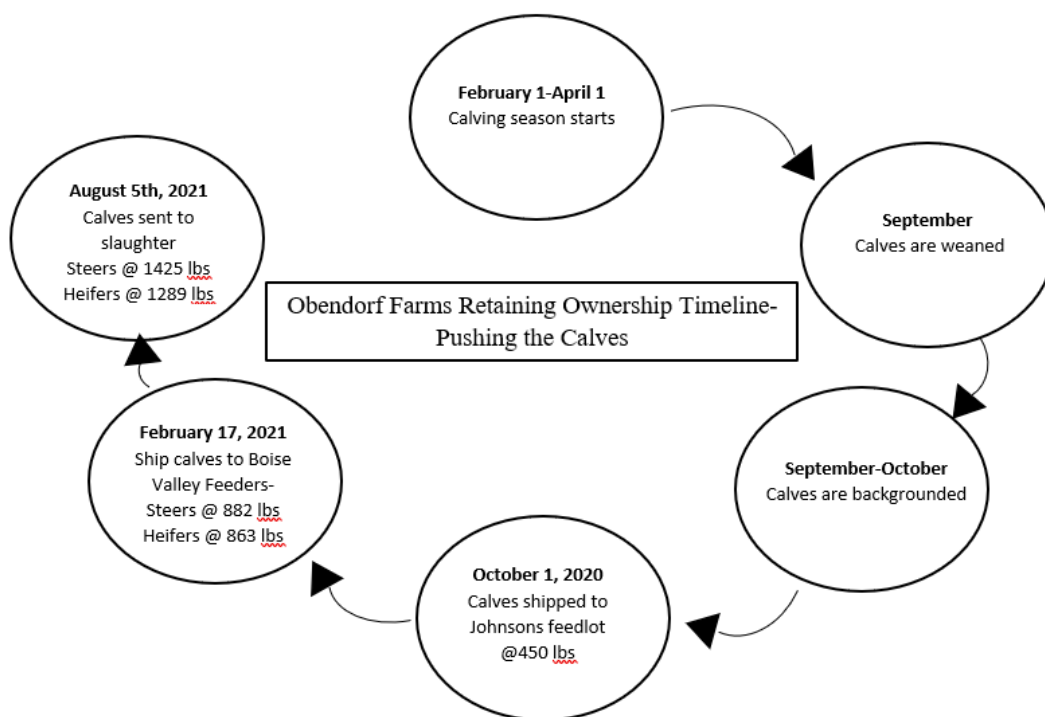
The second scenario reflects the farm selling the calves 30 days after weaning. Again, the actuals from January through July and the three-year average were used to complete the budget for the rest of the year. A few adjustments will be made to the budget. The operation will be able to sell more hay because they will no longer be feeding those calves for those extra months. In the hay income section of the budget, there will be an extra income of \$117,000 in hay sales. There will also be an adjustment made to the expense section because there will no longer be a custom chop expense to the ranch. Superior Livestock Auction has similar lots, weight, and geography, and those prices were used. This is looking at a mid-October sell date for those calves.

The third scenario consists of sending the calves to the feedlot and retaining ownership of them until they have reached a finished weight. There are two different feedlot scenarios that may take place. The first is a slow feed program. The purpose of the slow feed scenario is to delay the sale date which will put the calves in a better marketing window. In this scenario, the calves will be shipped to Johnson's Feedlot by October 1st and stay there for 200 days which gives a leave date of April 19, 2021. The steers will leave the feedlot weighing 865 pounds, while the heifer will leave weighing 850 pounds. This results in a 2 pound daily gain. They will arrive at Boise Valley Feeders on April 19, 2021, and remain there for 165 days. At this feedlot, the calves will gain 2.8 pounds per day for the heifers and 3.5 pounds per day for the steers. The steers will be at a finished weight of approximately 1443 pounds. The heifers will be at a finished weight of 1312 pounds. They will be ready for slaughter on October 1st, 2021, and will be purchased by Agribeeff. Below is a flow chart that represents the slow feed program for the calves.



The last scenario consists of pushing the calves harder on feed. This will be less costly than the slow feed scenario, however, the marketing window is not as ideal. The calves will be shipped to Johnson's feedlot on October 1st and will stay there for 139 days. This will result in

an exit date of February 17, 2021. The steers will leave Johnson's Feedlot at approximately 382 pounds and the heifers will leave weighing 863 pounds. The steers will gain 2.75 pounds per day, while the heifers will only gain 2.5 pounds per day. Once the calves have arrived at Boise Valley Feeders the steers will gain 3.4 pounds per day. The heifers will gain 2.8 pounds per day. The calves will spend 170 days on feed at this location. Once the calves have completed their time at Boise Valley Feeders the steers will be at a finished weight of 1425 pounds. The heifers will weigh approximately 1289 pounds. The calves will be sent to slaughter on August 5th, 2021. The chart below displays a timeline for pushing the calves harder on feed than the previous scenario.



IV. Data

Cowherd data is entered into an excel sheet that provides us with EID/Tag numbers, each cow's weight, birth year, open or pregnant status, body condition score, as well as which

vaccines were given. Finance data is kept in a quick books system that is manually entered and coded with each bill that pertains specifically to the ranch. This data helps the owners and managers make decisions based on actual information from the ranch. Information from the feedlot will be provided to us by the feedlot themselves.

The ranch maintains 800 mother cows, each year with growth the ranch keeps 200 replacement heifers. The bull to cow ratio on the ranch is 1 to 22 and the bull to heifer ratio is 1 to 25. The operation calculates 48% of calves born each year are heifer calves and 52% are bull calves which will be castrated. Typically, there are 5% of the cowherd that show up open after the breeding season which will be culled. On average this will leave 40 cows that are open and will be culled. The death loss percentage for the ranch is on average 3.5%. Leaving a 96.5% success rate during the calving season. Cows that lost their calves during birth or out on the desert will also be culled, on average, this is 28 cows that will be sold. Below is a chart of the summary statistics for the cow herd which displays how many calves will be taken to the feedlot. After taking into consideration death loss during calving and potential losses while calves are out on the desert, the ranch will ship approximately 572 calves to the feedlot with 401 of those being steer calves, which is 52% of the calf crop. While the other 171 will be heifer calves which are 48% of the calf crop minus the 200 replacement heifers.

Herd Characteristics				
Number of Cows (Bred Heifers and Older)			800	772
Number of Replacement Heifers			200	200
Number of Calves to ship (steers; heifers)				401;171
Percentage Death Loss during calving			3.50%	28
Percentage of Cows Open & Culled			5.00%	40

Transportation is typically a flat rate shipping. Obendorf Farms has obtained its own semi-truck and trailer to haul all of their own cattle. They charge themselves \$4.00 a mile. The feedlot that the calves will be shipped to is approximately 60 miles from the ranch. Each semi

load can hold 45,000 pounds. This means 100 calves can be shipped per load. In order to get all 572 calves shipped it will take 5.72 loads to get all the calves to the feedlot. To calculate what transportation costs will be, six loads will be calculated at \$4.00 a mile for 120 miles which will include the round trip cost. The total for transporting the calves to Johnson's feedlot will be \$2880.00. The transportation from Johnson's Feedlot to Boise Valley Feeders will be done by the feedlots then billed to the Obendorfs, as part of the cost per head at a later date.

The ranch's major costs include veterinarian costs, labor costs, and supplement costs. Vet costs include each vaccination that the cow's and the calves receive. A vet has put together a vaccination program for the cows and calves combined. The whole herd has been placed on a modified live vaccine which is given at branding/weaning. One month after weaning, the calves are given a five-way booster shot. Replacement heifers are given a pre-breeding shot. In the fall cows and calves are given a deworming shot. Along with the deworming shot in the fall the cows are given a booster shot. This results in \$13.00-\$15.00 spent annually on the cows in vaccines. On average each calf is given \$20.00 worth of vaccinations each year. Processing calves such as giving vaccines and branding increases the labor demand needed at the ranch.

In order for all the duties on the ranch to be completed, there are two full-time employees. This includes a ranch manager, one full-time domestic employee, as well as one H2A employee. The H2A employee is on the operation for 10 months out of the year beginning in February through the end of November. During the ranch's busy times employees from the farm will go and assist the ranch manager in tasks that cannot be done by the full-time employees. Owners also help keep the ranch running smoothly during busy times. Taking the calves to fat will not require an increase in labor for the farm. On average over the last three years, the ranch

spends \$113,939.05 on wages. Wage expenses for the ranch are one of the most important because without help no profit would be made on the ranch.

Cattle Supplements are a key part of animal health. Cattle supplements on that farm include a Free Choice Mineral which is purchased from Vanbeek Nutrition. They have recently done a study to evaluate how many ounces a day a pair is consuming of the mineral. The result is three ounces a day on average per pair. Brad Brudevold from Vanbeek Nutrition estimated that two of those ounces are consumed by the cow while the other one ounce is consumed by the calf. An ounce of the mineral is approximately .03 cents. On average a cow will consume 730 ounces a year making the cost \$22.33 per cow per year. While on the other hand, a calf will consume 365 ounces a year, making the calf cost \$10.95 per year per calf.

Revenues for the ranch come primarily from cattle income. The three year average for cattle income is \$564,821.70. The next largest category for the ranch is miscellaneous income which is for the most part insurance payments due to droughts. Over the last three years and the three year average for that is \$142,447.58. The ranch also grows 400 acres of alfalfa hay which is sold to dairies located in the Treasure Valley. Over the last three years, hay income has averaged \$69,153.16. The final source of income on the ranch is an agriculture program that was given to the ranch in 2019 for a Disaster Relief Program provided by the USDA. Although it was for one year, in order to keep everything, equal it needed to be put into a three-year average as well. The three-year average came out to be \$15,161.64. For 2017, 2018, 2019 the total income average was \$791,584.08 with income coming in from five different categories.

An important revenue that needs to be taken into consideration is cull cow income. The ranch typically sells 200 cull cows each year to make room for their incoming replacement heifers. On average the ranch sells their cull cows for \$900.00 a head. This will give the ranch

approximately \$180,000.00 in cull cow income each year. Each of the four scenarios will include the cull cow income.

The three scenarios where the farm sells or sends the calves to a feedlot will result in more hay income for the farm. They will also no longer need silage which means they can plant those acres in alfalfa hay and sell it. The ranch will be able to plant 130 more acres in alfalfa. These 130 acres should produce 5 tons an acre. The ranch will be able to sell this hay for \$180.00 a ton. This will increase gross profits by \$117,000.00 each year they don't feed their own calves until December.

Summary statistics is an important tool for producers to evaluate because it is essentially a snapshot of what's been going on during that time frame. Below is a chart of the summary statistics for the farm for 2017, 2018, and 2019. The chart shows the minimum, maximum, mean, and standard deviation for total income, total expense, and net income over the three years. The key numbers owners and management look at is the net income average over the three years. The average net income on the ranch is \$129,284.52 which shows the profitability on the ranch.

Summary Statistics			
	Total Income	Total Expense	Net Income
Min	568,000.59	612,681.16	(93,884.27)
Max	923,027.22	692,810.43	263,972.26
Mean	791,584.08	662,299.56	129,284.52
St. Dev	157,572.21	35,013.09	133,434.93

Adding value to the calves by taking them to a feedlot will result in more costs. Both feedlot scenarios have the same expenses just at different values for each of the feedlots they will be shipped to. The first feedlot scenario is the slow feed program. Below are two charts that display the costs at each feedlot. After all the costs have been included each steer will cost Obendorf Farms \$945.75 to feed until it has reached a finished weight. Each heifer will cost \$876.55 to feed until it has reached the finished weight. All feedlot data came directly from the feedlots the cattle will be shipped to.

Steer Cost per head @ Johnsons Feedlot		Steer Cost per head @ Boise Valley Feeders	
865	OUT WEIGHT	FEED COST	\$514.55
400	LBS GAINED	MEDICINE COST	\$15.00
\$6.13	COST OF GAIN FEED ONLY	DEATH LOSS COST	\$16.67
\$0.11	DEATH LOSS COST/HEAD	INTEREST ON FEED	\$0.00
\$17.82	OPPORTUNITY INTEREST PER HEAD	MISCELLANEOUS COST	\$0.00
\$244.50	FEED COST/HEAD	FREIGHT OUT COST	\$32.14
\$10.00	MEDICINE & PROCESSING PER HEAD	TOTAL COST FOR OBENDORF	\$578.36
\$80.00	YARDAGE COST HEAD		
\$8.00	MISCELLANEOUS COST PER HEAD		
\$3.50	BRANDS/DUES/BEEF PROMO/ HEAD		
\$363.93	FEEDYARD COST/HEAD		
\$3.46	FREIGHT OUT PER HEAD		
\$367.39	TOTAL COST FOR OBENDORFS PER HEAD		
Heifer Cost per head @ Johnsons Feedlot		Heifer Cost per head @ Boise Valley Feeders	
850	OUT WEIGHT	FEED COST	\$434.34
400	LBS GAINED	MEDICINE COST	\$15.00
\$62.32	COST OF GAIN FEED ONLY	DEATH LOSS COST	\$15.91
\$0.10	DEATH LOSS COST/HEAD	INTEREST ON FEED	\$0.00
\$16.62	OPPORTUNITY INTEREST PER HEAD	MISCELLANEOUS COST	\$0.00
\$249.28	FEED COST/HEAD	FREIGHT OUT COST	\$35.34
\$15.00	MEDICINE & PROCESSING PER HEAD	TOTAL COST FOR OBENDORF	\$500.59
\$80.00	YARDAGE COST HEAD		
\$8.00	MISCELLANEOUS COST PER HEAD		
\$3.50	BRANDS/DUES/BEEF PROMO/ HEAD		
\$372.50	FEEDYARD COST/HEAD	Total Costs for Obendorf Farms	
\$3.46	FREIGHT OUT PER HEAD	Steers/per head	\$945.75
\$375.96	TOTAL COST FOR OBENDORFS PER HEAD	Heifers/per head	\$876.55

The second feedlot scenario is cheaper for the producer. Both scenarios are similar to one another just at a different cost to the producer. The second scenario is cheaper for the producers because the calves are not spending as much time at the feedlot. This results in an overall cheaper yardage cost and feed cost. Pushing the feed on steers will cost the farm \$869.11 per head. The heifers will cost the farm \$804.62 per head.

Steer Cost per head @ Johnsons Feedlot		Steer Cost per head @ Boise Valley Feeders	
847	OUT WEIGHT	FEED COST	\$515.00
382	LBS GAINED	MEDICINE COST	\$15.00
\$51.35	COST OF GAIN FEED ONLY	DEATH LOSS COST	\$15.50
\$0.11	DEATH LOSS COST/HEAD	INTEREST ON FEED	\$0.00
\$11.89	OPPORTUNITY INTEREST PER HEAD	MISCELLANEOUS COST	\$0.00
\$196.14	FEED COST/HEAD	FREIGHT OUT COST	\$34.91
\$10.00	MEDICINE & PROCESSING PER HEAD	TOTAL	\$580.41
\$55.60	YARDAGE COST HEAD		
\$8.00	MISCELLANEOUS COST PER HEAD		
\$3.50	BRANDS/DUES/BEEF PROMO/ HEAD		
\$285.24	FEEDYARD COST/HEAD		
\$3.46	FREIGHT OUT PER HEAD		
\$288.70	Total cost for Obendorf per head		
Heifer Cost per head @ Johnsons Feedlot		Heifer Cost per head @ Boise Valley Feeders	
813	OUT WEIGHT	FEED COST	\$447.50
363	LBS GAINED	MEDICINE COST	\$15.00
\$54.12	COST OF GAIN FEED ONLY	DEATH LOSS COST	\$14.71
\$0.10	DEATH LOSS COST/HEAD	INTEREST ON FEED	\$0.00
\$11.52	OPPORTUNITY INTEREST PER HEAD	MISCELLANEOUS COST	\$0.00
\$196.46	FEED COST/HEAD	FREIGHT OUT COST	\$31.58
\$15.00	MEDICINE & PROCESSING PER HEAD	TOTAL	\$508.79
\$58.00	YARDAGE COST HEAD		
\$8.00	MISCELLANEOUS COST PER HEAD		
\$3.50	BRANDS/DUES/BEEF PROMO/ HEAD		
\$292.58	FEEDYARD COST/HEAD	Total Costs for Obendorf Farms	
\$3.25	FREIGHT OUT PER HEAD	Steers/per head	\$869.11
\$295.83	Total cost for Obendorf per head	Heifers/per head	\$804.62

Prices for the calves for each of the feedlot scenarios come from the futures market. For the first scenario, the calves are shipped to Agri-Beef on October 1, 2021. Based on the current futures quote the price is \$112.00 with a basis of \$2.50 for both the steers and heifers. The second scenario is when the calves are shipped to Agri-beef on August 5th, 2021. The current futures for this scenario are \$109.90 with a basis of \$2.50 for both the steers and heifers. The feedlot also provided the futures and basis numbers for the analysis.

Replacement heifers place a key role on the ranch. In all four scenarios, the ranch has decided to ship all 200 replacement heifers to Johnson's Feedlot. These 200 replacement heifers will be shipped to the Johnson's Feedlot on October 1, 2020, and will stay on feed for 261 days. Their daily gain will be 1.86 pounds per day. On June 6, 2021, the heifers will be shipped to

Baker City, Oregon when they weigh 950 pounds. Below is the cost related to the feedlot custom feeding the replacement heifers for the ranch.

Heifer Cost per head @ Johnsons Feedlot	
950	OUT WEIGHT
485	LBS GAINED
\$68.15	COST OF GAIN FEED ONLY
\$0.10	DEATH LOSS COST/HEAD
\$23.60	OPPORTUNITY INTEREST PER HEAD
\$330.53	FEED COST/HEAD
\$15.00	MEDICINE & PROCESSING PER HEAD
\$104.40	YARDAGE COST HEAD
\$8.00	MISCELLANEOUS COST PER HEAD
\$3.50	BRANDS/DUES/BEEF PROMO/ HEAD
\$485.13	FEEDYARD COST/HEAD
\$3.25	FREIGHT OUT PER HEAD
\$488.38	Total cost for Obendorf per head

Calf prices for the first two scenarios came from Superior Livestock Auction. When determining which lot is best to use as a comparison, location, weight, and date shipped was a big deciding factor. After talking to a representative from Treasure Valley Livestock Auctions, he stated that similar cattle to Obendorfs would sell for approximately \$154.00 for 700-pound steer calves. The heifer calves that weigh 635 pounds would sell for \$134.00. For the second scenario, which is shipping the calves 30 days after weaning, the price was \$184.00. In both scenarios, a consignment fee needed to be deducted from the calf income. The consignment fee is typically \$2.00 a head. The overall consignment fee that Superior Livestock Actions will take is \$1,144.00.

V. Results

Each scenario on the farm showed the management team at Obendorf Farms a variety of different answers. Selling calves 30 days after weaning showed a calf income of \$457,082.00. This means the ranch should see a gross profit of 932,562.14. Expenses for this scenario come out to be \$817,234.69. This will give the ranch a net profit of \$115,327.45. The ranch over the

last three years has seen a net income on average of \$129,284.52. This scenario does show a decrease from that average.

The second scenario is selling the calves in December, as they always do. Calf income for this scenario is more than the previous scenario, but the ranch must take into consideration feeding those calves. Calf income for this scenario is \$576,637.00. Resulting in a gross profit of \$935,117.14. Total expenses for this scenario come out to be \$838,271.69. The net income for this scenario is \$96,845.45 which is again below the three-year average.

The third scenario is the slow feed option of retaining ownership of these calves. Calf income is \$919,429.28 based on the current futures price and basis. Total expenses on these animals include their time on the ranch and in the feedlot which come out to be \$1,366,961.65. This will result in a negative net income for the ranch of -\$89,052.24. So far, the results are showing that taking the calves to fats is not the most ideal option for Obendorf Farms.

Finally, if the ranch were to push their calves on feed their calf income would be \$890,032.66, resulting in a gross profit of \$1,248,512.79. Expenses for this option, including the calves time on the ranch and as well as the feedlot, come out to be \$1,323,928.98. While the gross profit for this option does not look as appealing as the previous option, expenses in this scenario are lower than the slow feed option at the feedlot. This results in a net income of -\$75,416.19 which is the better of the two feedlot scenarios. Prices of cattle are changing daily, a sensitivity analysis will show the farm how cattle prices income the outcome.

Cattle prices can be greatly affected by multiple different factors, which cause prices to change frequently. A sensitivity analysis will show the owners at Obendorf Farms what could happen to their net income if prices were to change by just 10% in a positive or negative way. Below is a chart that shows each of the scenarios along with what would happen to the net income if prices were to increase or decrease. Selling calves at weaning or in December, as long as price only decreases by 10%, will still result in the farm making money. As for the feedlot scenarios, if cattle prices increase by 10% the farm would see a small profit on that set of calves.

Sensitivity Analysis			
	Current	10% Decrease in Price	10% Increase in Price
Sell Calves @ Weaning	\$115,327.45	\$70,534.45	\$160,120.45
Sell Calves in December	\$96,845.45	\$40,625.35	\$153,067.4
Retaining Ownership- Slow Feed	-\$89,052.24	-\$181,396.67	\$3,292.18
Retaining Ownership- Pushing Calves	-\$75,416.19	-\$164,102.72	\$16,437.71

Cattle prices are the biggest implication for the analysis done on the set of calves Obendorf Farms is deciding what to do with. Cattle prices can change from day to day which means the outcomes of each scenario can change at any given time. Other items that can skew the overall outcome for the feedlot results are feed costs and yardage costs. Depending on weather during the winter the calves are fed out it could result in increased feedlot costs. With an operation this size there are a lot of factors that play a role in the outcome of the net income for each of the scenarios.

VI. Summary

Based on the numbers provided and on today's cattle prices I would recommend for Obendorf Farms to sell their calves 30 days after weaning. This provides the farm with the highest net income of \$115,327.45. This option also has the least amount of risk involved. They are keeping the calves the shortest period of time which means there will be less chance of death loss. If Obendorf Farms is set on sending their calves to the feedlot, although the numbers show

otherwise, I would recommend pushing their calves on feed. The calves will spend the least amount of time at each feedlot this way. Unfortunately, this scenario still results in a net income of -\$75,416.19. My overall recommendation is for the farm to not retain ownership of their calves. By retaining ownership Obendorf Farms not only loses money but also exposes themselves to more risk than by not taking them to the feedlot.

VII. References

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