Growth promotant use in beef cattle

Growth promotants in the animal industry have been a hot topic lately, especially growth hormones. Growth promotants have proven to be a valuable resource to increase the efficiency of production of beef cattle. Producers have the opportunity to become more profitable with more cattle to bring to market in faster time than before. There are some concerns that growth promotants may make meat products less palatable to consumers. Some consumers have expressed concern of the possible side effects of " unnatural" hormones in their food. There is a large amount of science backing the safety and use of growth promotants, yet consumer fears are still largely prevalent. The FDA has to approve any growth promotants that are used before they can be used in the food supply, such as growth hormones. The growth promotants, or any other type of additive used in food production has to undergo a great amount of testing and research to determine it is safe before it will be used. Currently, in beef production, " There are six hormones approved for use in beef production. Three are natural hormones (testosterone, estradiol, and progesterone) and three are chemically similar synthetic hormones (melengestrol acetate, trenbolone acetate and zeranol)" (" The facts" 2012).

A common type of growth promotant is an implant, and this word can be thrown around a lot when talking about the beef industry. Beta-agonists are a common type of growth promotant used in livestock production. Some of the benefits of using beta-agonists will " increase the efficiency of production of lean meat. It also leads to an increase in lean meat and at times, a reduction in fat in the carcass, therefore increasing lean meat yield…

Improved efficiency reduces the resources (grains, water, land) needed to produce meat” (Dilger 2015).

In today’s society, we are always trying to find more ways to lead sustainable lives. In the future, growth promotants will likely become more prevalent if we plan to continue our way of living. Consumer concern may be one of the main factors that is holding the technology back from becoming a larger part of the industry. Implants are relatively easy to use and not invasive as they are inserted into the ear. Because ears are not a demanded animal product in human consumption, this can be one of the best places for an implant. These implants are safe because, “ The implants are designed to release the hormone slowly over time into the bloodstream. This ensures that hormone concentrations remain constant and low” (“ The facts” 2012). Using these hormones slowly over time simply ensures that the animal maintains a steady growth rate. Beef cattle that have implants are much more efficient than those without, “ Implanting during the feedlot phase on average increases ADG 18%, feed intake 6%, feed efficiency 8%, carcass weight 5%, and ribeye area 4% compared with nonimplanted controls” (Duckett 2014). These numbers could be seen as a small improvement to some, but when you multiply that gain by hundreds of head of cattle, a producer could see a large improvement in their end paycheck and lowered costs. Cattle are known to not be the most efficient use of feed resources, as far as their average daily gain. Hormone implants have the opportunity to increase the efficiency of the use of resources for production. In a study on the effects of growth promotants in cattle, “ Implanted steers grew 11. 4–19. 6% faster than non-implanted throughout the finishing period…” (Lopez-

Campos 2013). This means that the faster that the steers grow, the quicker the producer can get them to market by using less resources, and spending less money. Implanting the cattle may bring a higher price; in Lopez-Campos's study, it was found that the " Adjusted net return was best for calf-fed implanted ($17. 52 head), followed by calf-fed non-implanted ($−41. 92 head) ..." (2013).

Clearly, implants in this situation was much more profitable for the producer, and the end goal is to always make a profit. If the producer wants their business to keep running, they might have to consider using a growth promotant among other techniques. Producers have to keep a lot in mind when they are choosing if they plan to use implants or not. The trend of many consumers seems to suggest that they want their food to be high quality, natural and affordable. " Natural" is a marketing term that can be loose when describing what that means in the industry. The cost to produce the so-called natural cattle will be more expensive because the rate of gain is not as efficient as implanted beef. These cattle cannot be treated for illnesses, because antibiotics are not considered natural. Raising natural cattle will have higher costs in terms of feed, management, and keeping records. Producers may receive premiums, but they have to decide if the benefits will outweigh the higher production costs. Their cattle will also often have less weight to sell, and their cattle will take longer to grow to market weight (Melroe). The consumer demands a high quality end product of any animal industry, but beef could be considered one of the most criticized. Palatability is one of the most important factors to beef quality, because the consumer wants to enjoy what they are eating. Some consumers might

believe implanted beef is less desirable than non-implanted beef. Robinette found that implant strategies did not have an effect on the meat, “ There were no background or implant effects of initial juiciness, sustained juiciness, beef flavor or off flavor” (2012). Although, it is thought that when the cattle receive the implant may have an effect on the palatability. Even though there have not been any perceived differences, many consumers seem to still have a preference for non-implanted beef. There are concerns are about quality however; “ potential negative effects of implants on marbling scores, quality grades, and tenderness exist…More research is needed to further determine how anabolic implants alter lipogenic gene expression to address changes in marbling deposition with implant usage” (Duckett 2014).

Even with these quality concerns, the efficiency of growth of cattle with implants is unmatched by non-implanted cattle. One of the biggest concerns with implanting is the concern of palatability, “ Trained sensory analysis of initial juiciness, initial tenderness, sustained tenderness, flavor intensity, beef flavor, or overall mouth feel were unaffected by implant treatment” (Duckkett 2014). It seems as though the verdict on the effect of palatability and quality is still not a consensus. Some consumers have believed that using growth hormones in our food supply may have negative effects in terms of early puberty occurring in adolescents. In a study where gilts were fed implanted beef, non-implanted beef, and soy tofu, they did not find any signs of early onset puberty or differences in the number of days to reach estrus. In fact, the tofu had the highest amount of Estradiol hormone detected, “ E2 equivalents (nanogram per kilogram…) of the tofu supplement were ~570 times the natural and ~170 times the implanted

supplements” (Magolski 2014). This finding is intriguing, considering soy is considered a natural product to many consumers, and yet it still has a higher level of hormones naturally than implanted beef. Implants have been found to not have a substantial effect on the amount of hormones found in the meat, “ 500 grams (~ 1 lb) of beef from an implanted steer contains approximately 7 nanograms of estrogen compared to 5 nanograms of estrogen from non-implanted beef” (“ The facts” 2012). The difference between implanted and non-implanted beef can be seen as almost miniscule, when compared to hormones occurring naturally in products like soy.

Many consumers will consume products with soy included, but will hesitate when it comes to consuming beef that has been implanted with a hormone. It should be noted that hormones occur naturally in everything living, including plants, humans, and animals. From this study, one can assume that consuming such products should not have an effect on human development. Many consumers might look for the “ no added hormones” claim on their products when they are shopping at the grocery store. Consumers should be cautious of what they are consuming, but they should also be seeking out information when they are not educated on a subject. Companies seem to take this opportunity to make labeling claims to make more money on the same product. Consumers end up paying for a label that doesn’t actually make a difference in overall quality of the product. Growth hormones are used in cattle, but not in any other industry, so this claim could be seen as misleading. This is especially true when companies will charge more for this claim and the product being “ natural”.

In a study conducted at Oklahoma State University, “…our results suggest that most are not well-informed regarding actual use of hormones in production. While the average perceived hormone use rate by consumers in this study is 62% for cattle, 55% for hogs, and 57% for chicken, actual hormone use in cattle is more than 90% and there is no hormone use in swine or chicken production” (Yang 2017). False perceptions could have a negative impact on demand for meat, or at least conventionally produced meat. As the study suggests, many consumers simply lack the education on the role of hormones in their food. This means that somewhere along the line education for consumers is lacking. Consumers might end up paying more for these claims, and if they are not completely true, that’s a problem. In beef production, claims of non-implanted beef are actually true; “ Consumers that prefer to purchase naturally produced or organic beef raised without growth hormones, should be prepared to pay a premium. Implanted beef reduce the cost and resources required in beef production and that results in lower costs that are passed on to the consumer” (“ The facts” 2012).

How do we educate the consumer on hormone usage and safety, and whose job is it to do so? Overall, I believe growth promotants, such as implants have an important role in the food system. If we want to be able to produce more food with less resources and waste for the growing world population, implants seem to be a good option to do so. Growth promotants also have the opportunity to help the beef industry become more sustainable, by using less resources to produce the end product. It is also important to give producers and consumers the choice of implanted vs. not implanted beef. The agriculture industry seems to be at the forefront when it comes to

anyone becoming an expert and making false claims about the safety of certain practices. Consumers should be given more education on what growth promotants are, and how they work, so that they can make the choice of what product they want to purchase. It might be helpful if the FDA also required more regulations on certain labeling claims, or not allowing misleading claims to be put on products. There aren’t any perceived risks of using growth promotants in the food supply, but I believe the fear of the consumer has delayed how widespread the use can be.