



**The Business Case for Partnering with
Farmers in Regenerative Agriculture – A
A Beef Cattle Case Study**

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This case study was written by Assistant Research Scholar Beverly Teng and Senior Research Lead Chisara Ehiemere, of the NYU Stern Center for Sustainable Business. This case study was developed as the basis for a practical guide for institutions and is not intended to serve as an endorsement, source of primary data, or illustration of either effective or ineffective management.

NYU STERN CENTER FOR SUSTAINABLE BUSINESS

The NYU Stern Center for Sustainable Business (CSB) was founded on the principle that sustainable business is good business. We provide education, conduct research, and influence industry practice by proving the financial value of sustainability for business management and performance. At CSB, we aim to equip future and current corporate leaders with updated business frameworks that embrace proactive and innovative mainstreaming of sustainability, resulting in competitive advantage and resiliency for their companies as well as a positive impact for society. For more information, visit www.stern.nyu.edu/sustainability.

Introduction

Applegate was founded in 1987 when founder Stephen McDonnell wondered: “what if you weren’t afraid to read a hot dog ingredient label?” These musings led to a company that has innovated around the theme of sustainability in animal protein for over three decades. Applegate has been a pioneer of meat that uses no antibiotics ever since 1993, and it has continued this philosophy alongside animal welfare into today. In 2002, it introduced an organic product line, followed by 100% grass-fed beef hot dogs. Applegate Farms, LLC (Applegate) is presently a stand-alone subsidiary of **Hormel Foods**. Since being acquired in 2015, Applegate has continued to innovate by partnering with ranchers and other animal rearers to lead the industry towards a more sustainable future.

In 2021 Applegate launched the DO GOOD DOG™ hot dog, a hot dog made with beef verified as being raised using regenerative agricultural methods with a consumer-facing label to help educate customers and enable them to vote for sustainability through their purchasing power.

Applegate’s Regenerative Beef

Applegate worked with NYU Stern Center for Sustainable Business (CSB) to use the Return on Sustainability Investment (ROSI™) Framework and methodology to determine the tangible and intangible financial benefits associated with taking a regeneratively-sourced product to market.

The [regenerative agricultural practices](#) behind Applegate’s DO GOOD DOG™ hot dog are hoping to create a positive environmental impact through soil enrichment, increased water retention, and carbon sequestration.¹ Regenerative agriculture allows cattle to roam in a way that mimics natural grazing cycles and helps to break up dead vegetation, bury seeds, and create areas for water collection resulting in healthy soil, enhanced carbon sequestration, and improved biodiversity. Additionally, manure from the cattle is also used to fertilize the soil—further contributing to a healthy soil biome.

Applegate’s regenerative agriculture practices have been verified through its collaboration and certification with third-party institutions. Applegate’s regenerative agriculture practices have been developed in partnership with the Savory Institute, a global leader in the regenerative agriculture space. Additionally, Applegate’s regenerative DO GOOD DOG™ hot dog is verified by Land to Market, an organization that works directly with farmers and ranchers to monitor the sustainability of land and ecosystem management practices. Land to Market’s [Ecological Outcome Verification™](#) measures regeneration through four ecological indicators: ground cover, water infiltration, biodiversity, and soil carbon and health.²

NYU Stern CSB worked with Applegate to explore the most effective ways to engage with ranchers and consumers as the company continues to expand its regenerative product line in

¹ Applegate Farms, LLC. (2023). *Positive Impact, One Small Bite at a Time*. Retrieved from Applegate: <https://applegate.com/regenerative-agriculture>

² Land to Market. (n.d.). *Ecological Outcome Verification™*. Retrieved from Land to Market: <https://www.landtomarket.com/eov>

order to build awareness for this new product category while also supporting revenue growth, cost savings, and capitalizing on competitive advantages.

The Business Case for Regenerative Beef

The introduction of regenerative beef production comes at a critical time for beef consumption. The [Food and Agriculture Organization](#) (FAO) reports that global livestock emit a total of 7.1 gigatons of CO₂-equivalent every year, accounting for 14.5 percent of all anthropogenic GHG emissions.³ While there has been an [increase in “flexitarian”](#)⁴ and [plant-based](#)⁵ diets, [meat consumption in the US](#)⁶ remains relatively stable. Growth in the plant-based meat industry has also stalled in some ways while consumers have, instead, continued to demonstrate [interest in more sustainable animal proteins](#).⁷ Given these trends, there may also be significant growth opportunities for regenerative meat production in the coming years which may positively impact Applegate’s financial performance.

Applegate has already established itself as a leader in the grass-fed beef hot dog market, and there is still significant sales lift potential for the introduction of products with regenerative label claims stored in recyclable, compostable, or reusable packaging. The company may be awarded by consumers for innovating ahead of its peers. As environmental awareness and health-consciousness continues to increase among consumers, Applegate’s regenerative offerings are a key opportunity for the company to continue to lead the way towards more sustainable animal protein.

ROSI Benefits

NYU Stern CSB’s Food & Agriculture Return on Sustainability Investment Framework was used to identify benefits for both Applegate and the ranchers that they collaborate with. The potential benefits for a company, such as Applegate, through **marketing regenerative agriculture products** may include the following:

1. Ability to promote expanded regenerative agriculture product offering and increase market share
2. Increased loyalty (and long-term contracts) with retailers
3. Increased media exposure and brand marketing

³ Opio, C. (2016). *Livestock & Climate Change*. Retrieved from Food and Agriculture Organization of the United Nations: <https://www.fao.org/3/i6345e/i6345e.pdf>

⁴ Morris, M. (2022, March 17). *The rise of the flexitarian diet*. Retrieved from NS Healthcare: <https://www.ns-healthcare.com/news/the-rise-of-the-flexitarian-diet/>

⁵ Ray, D. (2022, October 26). *Plant-based diets – going mainstream*. Retrieved from Food & Beverage Insider: <https://www.foodbeverageinsider.com/formulation/plant-based-diets-going-mainstream-0>

⁶ Kuck, G. & Schnitkey, G. (2021, May 12). *An Overview of Meat Consumption in the United States*. *farmdoc daily*, 11(76).

<https://farmdocdaily.illinois.edu/2021/05/an-overview-of-meat-consumption-in-the-united-states.html>

⁷ Oatman, R. (2022, June 16). *Consumer research indicates plant-based food interest is fueled by environmental concerns*. Retrieved from Meat + Poultry: <https://www.meatpoultry.com/articles/26774-consumer-research-indicates-plant-based-food-interest-is-fueled-by-environmental-concerns>

4. Reduced market risk from plant-based products
5. Increased employee well-being and engagement

Examples of the potential benefits for a company, such as Applegate, through **partnering directly with regenerative agriculture farmers** may include the following:

1. Ensuring supply of regenerative agriculture meat
2. Increased farmer loyalty which can reduce supply disruption
3. Contributing to meeting the company's published goals for GHG reduction, which includes the documented outcomes to support this benefit
4. Contributing to meeting the company's published goals for water quality improvement, which includes the documented outcomes to support this benefit

The potential **operations-related** benefits for ranchers moving from conventional practices to regenerative agricultural practices may include the following:

1. Reduced feed costs due to increased carrying capacity (or grass productivity) of the land and longer grazing season
2. Reduced vet costs due to increased livestock health
3. Reduced fertilizer costs
4. Reduced machinery and fuel costs
5. Reduced labor costs
6. Reduced chemical costs (e.g. pesticide and herbicide usage)
7. Increased ability to sequester CO₂ from the land and potentially be financially rewarded (e.g. offsets) due to improved soil health
8. Reduced water irrigation costs due to increased water-holding capacity in the soil
9. Reduced risk of soil erosion and nutrient run-off (which can reduce land degradation)

The potential **sales-related** benefits for ranchers through regenerative agricultural practices may include the following:

1. Increased revenue per animal due to access to premiums for the "whole animal". Note that realizing this benefit requires value chain cooperation and traceability.
2. Increased sales due to ability to increase quantity of beef per acre and price premium associated with offering regenerative agriculture products
3. Increased sales due to price premium associated with increased nutrient density (potentially a long-term benefit)
4. Increased farmer well-being due to access to premiums for improvement in regenerative agriculture outcomes (potentially a long-term benefit)

All of the operations-related and sales-related benefits for ranchers listed above were monetized.

Methodology: Applying ROSI

The ROSI process combined comprehensive research on regenerative farming practices and Applegate's current and future regenerative efforts, internal and external stakeholder interviews,

and scoping and prioritization in order to determine which benefits would be most impactful based on Applegate's internal regenerative strategy and availability of data. Additional details on the benefits assessed are highlighted below.

For Ranchers

Assumptions for Monetization Calculations

Analysis of rancher benefits was largely based on external research and interview findings, so CSB made several general assumptions in order to perform monetization analysis. The full list of assumptions can be found in **Appendix A**. The external research was primarily focused on the United States. Many of the operations-related incremental monetary values calculated and associated assumptions leveraged insights from a [2021 Texas beef cattle case study](#) that focused on the transition from a conventional continuous grazing system to a regenerative or holistic management grazing system.⁸ The key units used to measure monetization of rancher benefits are: \$/acre/year, \$/animal grazing/year, \$/animal sold/year, and \$/animal. Based on the assumptions made, CSB estimates that benefits may be realized in a minimum of 3-5 years but it is possible that outcomes may be realized sooner depending on farmland and other ranch-specific factors.

Rancher-specific outcomes will vary based on geographic region/climate, stage of regenerative farming, type of animals being raised, and other farm-specific conditions. Some additional costs may be required to achieve certain benefits and increase in revenue from beef supply may not be guaranteed because it depends on several different factors.

Additionally, because agriculture systems are incredibly complex and deeply interconnected, the external research that CSB performed focused more on the broader benefits that ranchers can derive from regenerative farming. This analysis is aimed at specifically demonstrating the maximum upside and potential in transitioning from conventional farming to regenerative farming practices. Consequently, much of the research on rancher benefits does not lend itself well to an in-depth explanation of each individual benefit.

Examples of Potential Financial Benefits

- 1) **Increased supply of regenerative agriculture beef** reduces prices for supply due to economies of scale.

Proposed Steps to Monetize

1. Review the list of rancher benefits and group them together based on financial outcomes (e.g. reduced feed costs, reduced vet costs, etc.)

⁸Harmel, R.D., Smith, D.R., Haney, R.L., Angerer, J., Haile, N., Grote, L., Grote, S., et al. (2021). Transitioning from conventional continuous grazing to planned rest-rotation grazing: A beef cattle case study from central Texas. *Journal of Soil and Water Conservation*, 1-13.
<https://doi.org/10.2489/jswc.2021.00159>

2. Determine a standard unit(s) of measurement across the various financial benefits analyzed (e.g. \$/acre/year, \$/animal grazing/year, \$/animal sold/year, \$/animal)
3. Leverage external research and interview findings, where applicable, to calculate incremental monetary values
4. Highlight and propose which benefits may need to be further reviewed once external research is available
5. Sort results based on the type of benefit (operations vs. sales-related), unit of measurement, magnitude, and the length of time required to achieve each benefit
6. Visualize results
7. Validate high-level approach with experts in the field

Conclusion

By incorporating innovative sustainable practices, such as regenerative agriculture, early on, a company like Applegate can continue to be a leader in sustainable food and agriculture. Through this project, CSB identified many potential benefits for both Applegate and ranchers through transitioning to regenerative agriculture practices.

For emerging sustainable strategies in the food and agriculture industry, such as regenerative agriculture, there is more beyond this case study that a company like Applegate can do to better understand the tangible and intangible financial benefits of engaging with consumers to market and spread awareness about more sustainable product offerings. Effective communication is critical to encourage consumers, peers, and other industry stakeholders to support the growth of regenerative agriculture and change mindsets about opportunities in sustainability.

The ROSI™ model was used in this case study to explore opportunities in regenerative agriculture for Applegate and ranchers but the methods and lessons learned from this case can also be used by other organizations working in conventional animal proteins to assess the benefits of adapting more sustainable agriculture practices. Additionally, the Food and Agriculture Framework used can serve as a platform to further support more holistic discussion about the challenges and opportunities associated with transitioning to regenerative agriculture while also identifying areas where more data and research is needed.

Globally, the agriculture industry is a significant contributor to GHG emissions with [cattle and dairy cows alone emitting more than any single country in the world, except for China](#).⁹ Therefore, reducing GHG emissions in the agriculture sector is crucial in order to reduce the impact of climate change. Regenerative agriculture is a holistic approach to both land and animal management that utilizes the interconnectedness of agricultural systems to nourish people and the planet. This project is an example of how ROSI can uncover the business

⁹ Ahmed, J., Almeida, E., Aminetza, D., Denis, N., Henderson, K., Katz, J., Kitchel, H., et al. (2020, April). *Agriculture and climate change*. Retrieved from McKinsey: <https://www.mckinsey.com/~media/mckinsey/industries/agriculture/our%20insights/reducing%20agricultur e%20emissions%20through%20improved%20farming%20practices/agriculture-and-climate-change.pdf>

opportunities and value of transitioning to regenerative agriculture practices and effectively marketing regenerative beef products.

APPENDIX A

Assumptions for Rancher Benefit Monetization

Type of Benefit	Assumption(s)
Reduction of capital equipment & basic rancher costs (e.g. reduced vet costs due to improved livestock health, reduced fertilizer costs, reduced labor costs)	Used 5 years of cost data for conventional continuous grazing vs. planned rest-rotation grazing found in a 2021 Texas beef cattle case study . ¹¹ Calculated the cost difference between the two systems on a per acre basis in order to determine total savings.
Improved carbon sequestration from the land	A researcher at MSU estimated that ~1.1 MT of CO ₂ can be sequestered/ha/year. This value was then converted to MT/acre/year and multiplied by price/CO₂ ton in the California carbon market (\$19.70 per ton which converts to \$21.72 per MT as of October 2022). ¹⁰
Improved soil water-holding capacity	Assuming a 1% increase in soil organic matter results in 20,000 gallons more water retained per acre resulting in 20,000 gallons of water consumption reduced per acre. ¹¹ Assuming it takes 10 years to achieve a 1% increase in soil organic matter. Assuming farmland soil has the average amount of soil organic matter of 3-6% and that ranchers can increase this by at least 0.1%/acre/year. ¹²
Reduced risk of soil erosion and nutrient run-off	Farmland Information Center estimates an incremental monetary value of \$2/acre/year for the implementation of soil health

¹⁰ Burtraw, D., Cullenward, D., Fowlie, M., Roedner Sutter, K., Brown, R. (2022, February). *2021 Annual Report of the Independent Emissions Market Advisory Committee*. Retrieved from California Environmental Protection Agency (CalEPA): <https://calepa.ca.gov/wp-content/uploads/sites/6/2022/02/2021-IEMAC-Annual-Report.pdf>

¹¹ Bryant, L. (2015, May 27). *Organic Matter Can Improve Your Soil's Water Holding Capacity*. Retrieved from NRDC:

<https://www.nrdc.org/bio/lara-bryant/organic-matter-can-improve-your-soils-water-holding-capacity>

¹² Fenton, M., Albers, C., Ketterings, Q. (2008). *Soil Organic Matter*. Retrieved from Cornell Cooperative Extension Franklin County: <https://franklin.cce.cornell.edu/resources/soil-organic-matter-fact-sheet>

	practices. ¹³
Increased revenue per animal due to access to premiums for the “whole animal”	Subtracted two premium cowhide cost scenarios (e.g. \$0 premium per cow hide for 0.2 cows per acre vs. an estimate of \$10 premium per cow hide for 0.5 cows per acre).
Increased sales due to increased quantity of beef per acre and price premium	<p>Assuming the average weights of a conventional beef cow and grass-fed cow are the same (~1200 lbs).¹⁴</p> <p>Assuming that, on average, 41% of the cow can be sold as meat.¹⁵</p> <p>Scenario 1: Assuming that regenerative beef costs 25% more than conventional beef. Therefore, conventional beef costs \$2.96 per pound.¹⁶</p> <p>Scenario 2: Using the 25% price premium for regenerative beef, assuming that regenerative beef is priced at \$3.70 per pound.</p> <p>Assuming it will take 2.5 years to realize benefits given that it takes 30 months to raise grass-fed cattle for beef supply.</p> <p>Subtracted Scenario 1 price from Scenario 2 and divided by 2.5 in order to calculate annual incremental monetary value.</p> <p>Kill fees and processing costs were from Best Farm Animals.¹⁷</p> <p>Transportation costs per cow were from a</p>

¹³ Herriman, S. (2022, July). *Soil Health Case Study*. Retrieved from Farmland Information Center: https://farmlandinfo.org/wp-content/uploads/sites/2/2020/02/Herriman-Case-Study_FINAL_072222_WEB-Version.pdf

¹⁴ Funnell, B. (2013). Grass-fed Versus Conventional Beef Production Systems. *NAVC Conference 2013 Large Animal*. Orlando, FL: Vetfolio. Retrieved April 2, 2023 from <https://www.vetfolio.com/learn/article/grass-fed-versus-conventional-beef-production-systems>

¹⁵ Justagric. (n.d.). *How Much Does a Cow Cost to Buy and Butcher*. Retrieved from Justagric: <https://justagric.com/how-much-does-a-cow-cost-to-buy-and-butcher>

¹⁶ Stone Barns Center for Food and Agriculture, Armonia LLC, Bonterra Partners. (2017, April). *Back to Grass: The Market Potential for US Grassfed Beef*. Retrieved from Stone Barns Center for Food and Agriculture: https://www.stonebarnscenter.org/wp-content/uploads/2017/10/Grassfed_Full_v2.pdf

¹⁷ Duran, A. (n.d.). *How Much Does It Cost To Butcher A Cow? Is A Beef Steer Worth It?* Retrieved from Best Farm Animals: <https://bestfarmanimals.com/how-much-does-it-cost-to-butcher-a-steer-is-it-worth-it/>

[2017 UC Davis report](#).¹⁸

¹⁸ Forero, L.C., Stackhouse, J., Sterwart, D., Sumner, D.A. (2017). *Sample Costs for Beef Cattle*. Retrieved from UC Davis: https://coststudyfiles.ucdavis.edu/uploads/cs_public/28/34/2834f4a4-c487-4359-bea0-4e891a8b6639/2017beefyearlingstockerssacvalfinaldraft_71917.pdf

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