



Growth Promotants Reduce Beef's Environmental Impact

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Increasing the efficiency of beef production is one way to reduce environmental impact by decreasing the number of cattle required to produce a given amount of beef. Growth promotants (GP) play an important role in increasing the efficiency of beef production through increasing the conversion of the feed cattle eat into beef. While some types of growth promotants can be utilized earlier in an animal's life, they are primarily utilized during the finishing phase, which is approximately the last 120 to 140 days before the animal is harvested. There are three commonly used types of FDA-approved GPs in beef production: growth implants, ionophores and β -adrenergic agonists (β AA). Beef production systems that use GP technologies are typically referred to as "conventional," whereas production systems that never use any of the three technologies are usually referred to as "natural" beef production systems.

Growth implants are small capsules that are placed under the skin on the backside of the animal's ear. They release a small amount of either natural or synthetic hormones through time and work in conjunction with the animal's natural hormones to increase growth. These implants typically consist of synthetic estrogen, testosterone or progesterone.

Ionophores are feed additives used to alter rumen bacterial fermentation, allowing for improved feed efficiency and decreased methane (a greenhouse gas, or GHG) emissions. Ionophores can be utilized in any phase of the beef animal's life cycle (e.g., when they are raised on grass or in the feedlot during finishing), and can often be found in protein or energy supplements provided to beef cows while grazing low-quality grasses.

Finally, β AA's are also a feed additive, but are restricted to the final 20 to 40 days of finishing, with a three day withdrawal period before harvesting. β -adrenergic agonists increase lean muscle mass, while decreasing fat deposition. This means that for every pound of body weight an animal fed β AA gains, a higher proportion of the body weight gain will be protein, compared to a similar animal not fed β AA¹. Each GP works individually to improve feed efficiency, but combining the three GPs can dramatically improve production efficiency, especially during the finishing phase and can decrease GHG emissions per pound of body weight gain by 28 percent when compared to beef production systems not using GP².

While ionophores can directly reduce methane emissions produced by individual beef cattle, in general, GP reduce both GHG emissions produced and natural resources required per unit of beef (Figure 1) by decreasing the length of time required for an individual animal to reach harvest and the number of

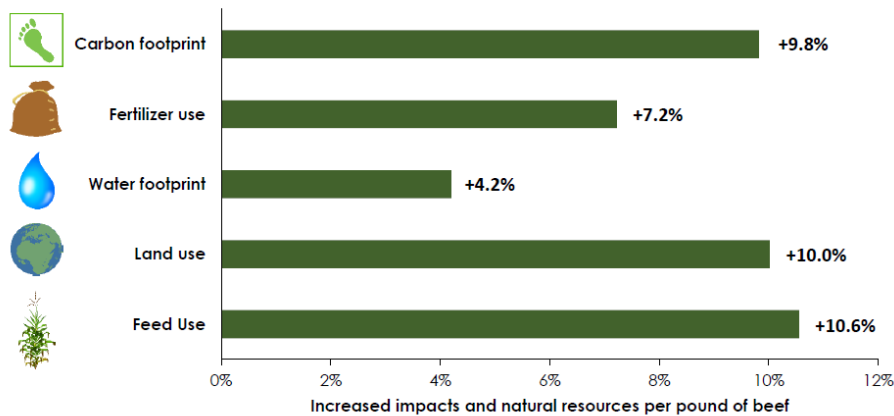


Figure 1. Increase in environmental impacts per unit of beef if no growth promoting technologies were used in U.S. beef production systems³. Courtesy of openclipart.org.

animals required to produce a given amount of beef^{2,3}. For example, research has shown that in beef production systems using GP technologies, each animal will produce enough beef to feed approximately 1.66 more U.S. citizens, compared to animals in beef production systems not using those technologies (Figure 2).⁴ Research utilizing both live animals^{1,2,4} and computer models^{3,5} has consistently shown a decrease in the environmental impact of beef production with the use of GP technologies. Some consumers prefer to not purchase beef produced in systems that use GP technologies (i.e., “natural” beef), which is a valid food choice; however, there are negative environmental sustainability consequences for not using GP technologies in U.S. beef production.

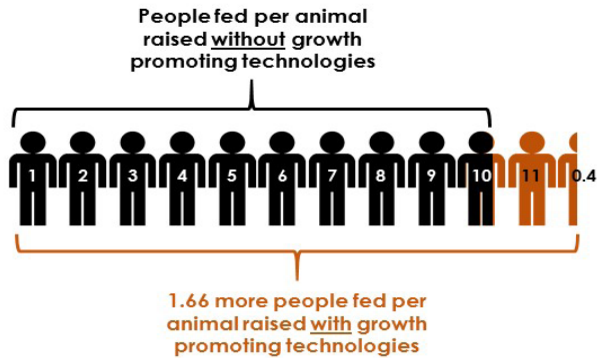


Figure 2. U.S. citizens fed per beef animal for one year for beef production systems not using growth promoting technology (black) as compared to beef systems using growth promoting technology (black plus orange)⁴. Courtesy of openclipart.org

Summary

Growth-promoting technologies can reduce the environmental impact of beef production by decreasing the number of cattle required to produce a given amount of beef. Additionally, growth-promoting technologies allow farmers and ranchers to feed more U.S. citizens with each beef animal raised under their care.

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