The Environmental and Economic Impact of Steroid Implant and Beta-Adrenergic Agonist Use Within U.S. Beef Production

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INTRODUCTION

• The beef industry faces the challenge of producing sufficient affordable beef to fulfill nutritional requirements of the growing global population whilst improving environmental sustainability
• Improving productivity through increased growth rate and slaughter weight reduces resource use and greenhouse gas (GHG) emissions per unit of beef
• A positive correlation exists between environmental impact and economic costs of production
• Consumers want affordable food and are concerned about the environmental sustainability of beef production, yet retailers often cite consumer concerns as a rationale for withdrawing production-enhancing technologies from food systems

MATERIALS & METHODS

• A deterministic, environmental impact model based on the nutrition and metabolism of beef cattle (Capper, 2012) was used to quantify resource use and GHG emissions from producing 363 kg hot-carcass weight beef (average U.S. carcass weight)
• Model system boundaries extended from manufacture of cropping inputs to animal arrival at the slaughterhouse door
• Beef production was modeled using characteristic U.S. production data, management practices and population dynamics; and included four animal sub-systems: cow-calf, stocker, feedlot plus inputs (calves and cull cows) from dairy production
• Four beef production systems were compared: one using βAA-only (βAA), one using SI-only (SI), one using both technologies (SI+βAA) and one without either technology (NOT)
• Where applicable, SI were used in the stocker and feedlot system, βAA were used in the feedlot only.
• Economic impact was calculated based on feed usage (as feed comprises ~70% of variable costs) for beef production at national market prices

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REFERENCES