The Environmental and Economic Impact of Withdrawing Parasite Control (Fenbendazole) from U.S. Beef Production

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OBJECTIVE

To quantify the effects of withdrawing a parasite control compound (Fenbendazole) from U.S. beef production upon environmental and economic sustainability metrics

INTRODUCTION

- Livestock system sustainability is dependent upon balancing economic viability, environmental responsibility and social acceptability
- The U.S. beef industry faces the challenge of producing sufficient affordable beef to fulfill requirements of the growing population, whilst continuing to improve all three sustainability metrics
- Effective parasite control as part of an animal health program is an essential component of improving animal productivity and effectve resource use
- Consumers cite animal welfare as a important issue within modern production systems, yet are often concerned about the use of chemical compounds to control animal disease

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 greenhouse gas (GHG) emissions from producing 363 kg hot-carcass weight beef
- 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
- Two beef production systems were compared: one using Fenbendazole to control parasite infection in growing and mature cattle, the other without Fenbenzadole
- Data relating to the impact of Fenbendazole withdrawal upon reproductive and growth parameters were derived from peer-reviewed published literature
- Economic impact was calculated based on feed usage for beef production at national market prices

ACKNOWLEDGMENTS

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RESULTS

Table 1. Reproductive and growth data for animals from two U.S. beef production systems differing in parasite control (Fenbenzadole)

	Parasite Control	No Parasite Control
Pregnancy rate (%)	91	81
Yearling-fed beef growth rate (kg/d)	1.10	0.96
Calf-fed beef growth rate (kg/d)	1.10	0.98
Dairy-fed beef growth rate (kg/d)	1.30	1.22
Overall slaughter weight (kg)	582	560
Overall growth rate (birth – slaughter, kg/d)	1.31	1.10

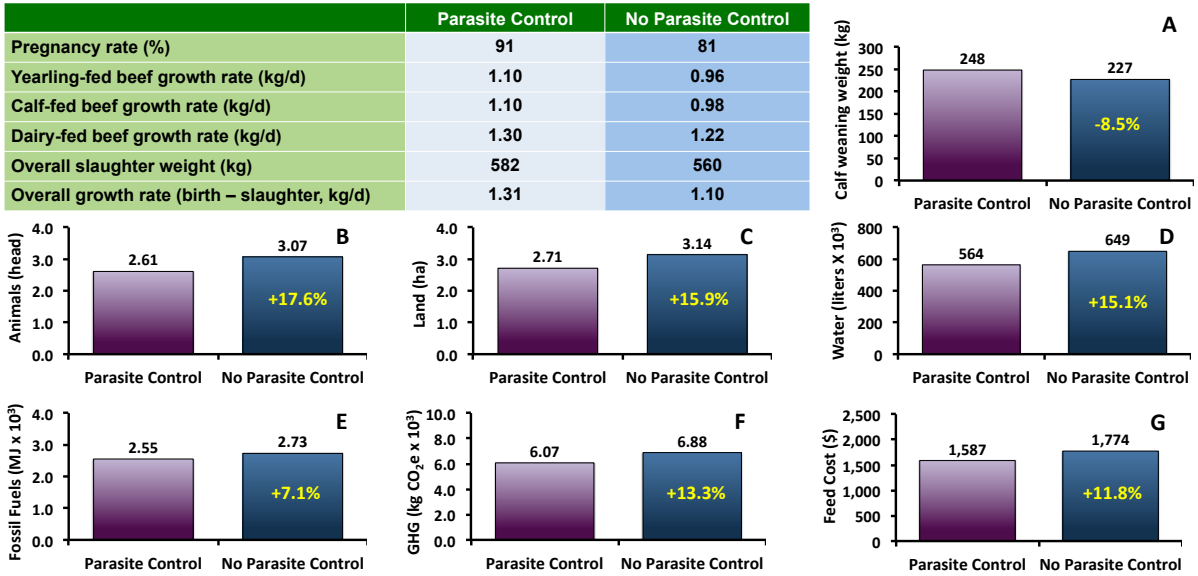

Figure 1.Calf weaning weight (A), resource use (B: animals, C: land, D: water, E: fossil fuel energy), GHG emissions (F) and economic impact (G: feed cost) per 363 kg hot-carcass weight beef produced within two U.S. systems differing in the use of parasite control (Fenbenzadole)

The extra boneless beef (1,542) produced from the average U.S. beef herd (40 cows) using parasite control would supply 19 families with their annual beef demand

CONCLUSIONS

- Withdrawal of parasite control (Fenbendazole) from the U.S. beef production system reduced productivity, with decreases in both environmental and economic sustainability metrics
- To maintain producer access to technologies and practices that improve animal health, the sustainability gains conferred by their use need to be communicated via messages that will resonate with the consumer

REFERENCES

Capper, J. L. 2012. Is the grass always greener? Comparing resource use and carbon footprints of conventional, natural and grass-fed beef production systems. Animals 2:127-143.