



Cattle, Climate and Complexity

ACV Virtual Conference

November 2021

Background Marked increases in atmospheric CO₂ concentrations are largely associated with the release of sequestered carbon in fossil fuels. While emissions of green-house gasses (GHG) from cattle have significant global warming potential, these are biogenic sources and substantially involve carbon in natural cycles, rather than fossil fuel. Cattle use human inedible feeds and by-products of human food production to produce nutrient dense foods of great value to humans.

Interventions to reduce GHG production Reductions in land clearing and burning of grasslands and increased carbon sequestration in soils and trees have potential to substantially reduce GHG emissions. Increased efficiencies of production through intensified feeding and enteric modification have markedly reduced intensity of GHG emissions for cattle in Australia. Genetic selection for lower emissions has modest, but cumulative potential to reduce GHG (mostly CH₄) emissions and intensity. Improved reproductive performance can reduce intensity of GHG emissions, especially in beef production. Feeds and technologies that reduce GHG production and intensity include improved pastures, grain feeding, dietary lipids, nitrates, ionophores, seaweed, 3-NOP, hormonal growth promotants in beef, and improved diets for peri-parturient dairy cattle. There is considerable potential to further reduce emissions from cattle using the technologies reviewed.

Interventions to reduce heat stress Cattle are susceptible to heat stress and ameliorating interventions include tree and shelter belts, shade, housing, cooling with fans and water and dietary manipulations.

Conclusions Numerous interventions can reduce GHG emissions and intensity from cattle. There are opportunities to increase carbon capture and maintain biodiversity in Australia's extensive rangelands, but these require quantification and application. We can reduce the intensity of CH₄ emissions for cattle in Australia and simultaneously improve their well-being.