

Incorporating silvo-pastoral production in an optimised circular food system: Options to reduce GHG emissions

Donagh Hennessy, Laurence Shalloo, Imke de Boer.

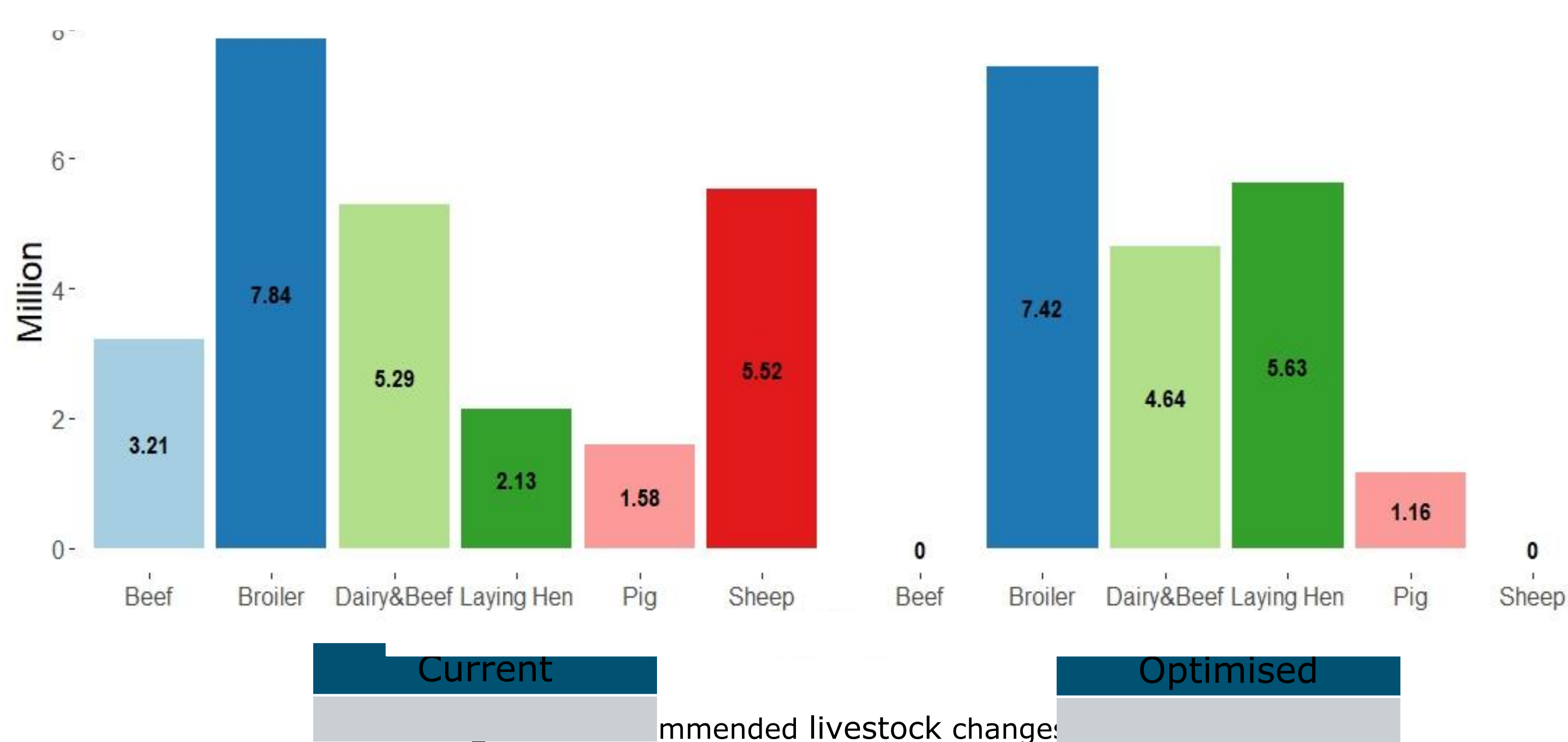
Background

- Targets exist for GHG emission reduction from the agriculture sector
 - Set to bring the sector within our planetary boundaries
- Some opportunities exist to sequester carbon with land
 - Land-use change from pasture to silvo-pasture can retain its ability to be used in food production
- Incorporating the principles of the circular food system is a solution pathway to optimize food production for minimal inputs and reduce GHG emissions

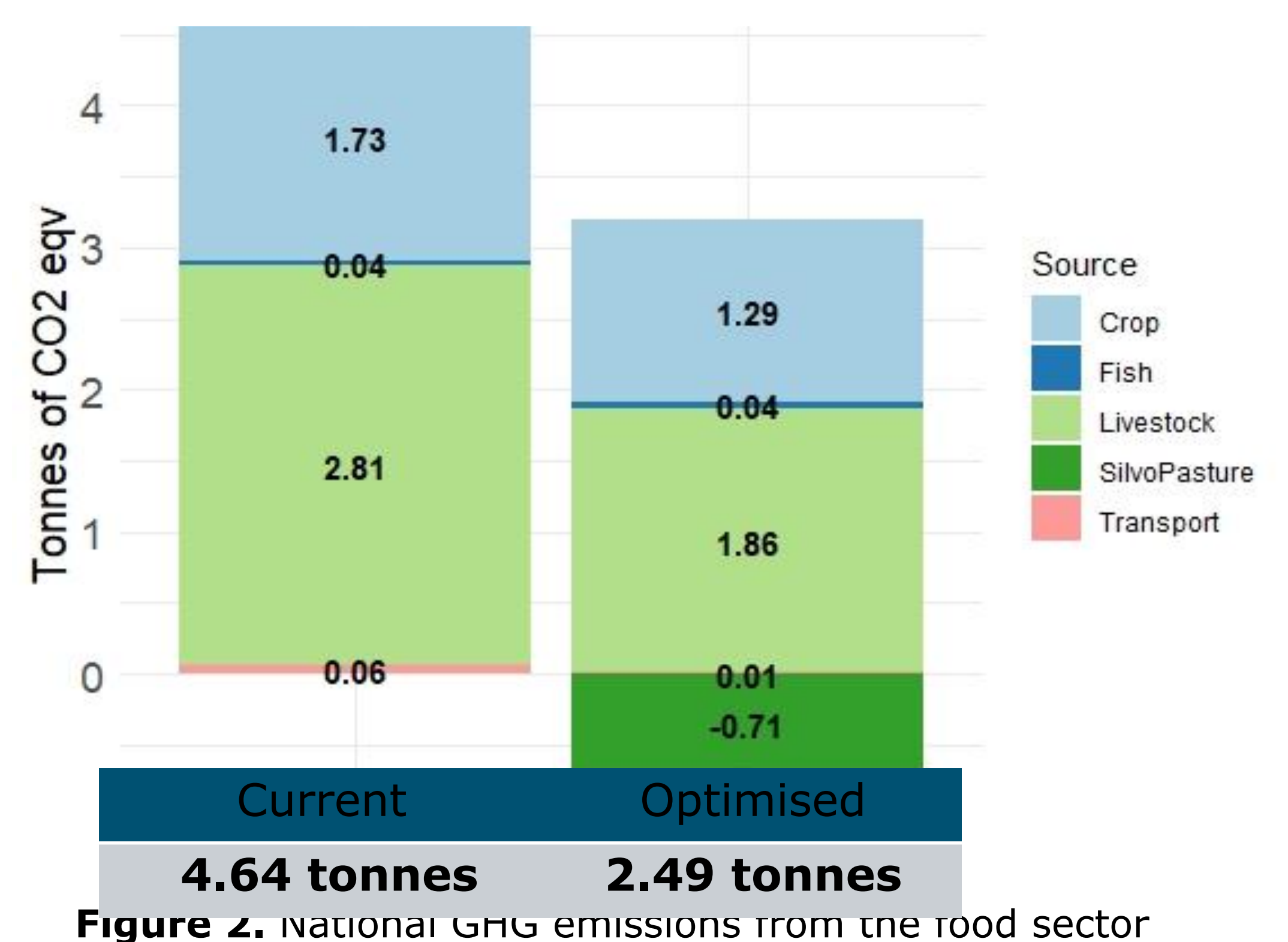
Objectives

- Engage the CiFoS_IE model to replicate Ireland's food sector's relative protein and kilo-calorific exports with minimal GHG emissions
- Incorporating the principles of a circular food system
 - Eliminating feed-food competition
 - Reincorporating the leftovers of food production including co-products and food loss as livestock feed
- Include the opportunity to sequester carbon through the use of silvo-pastoral systems as part of the potential choice of land-use
 - Limited to grazing for dry-stock

Relative change in livestock production



GHG emission per capita



Recommended land-use composition

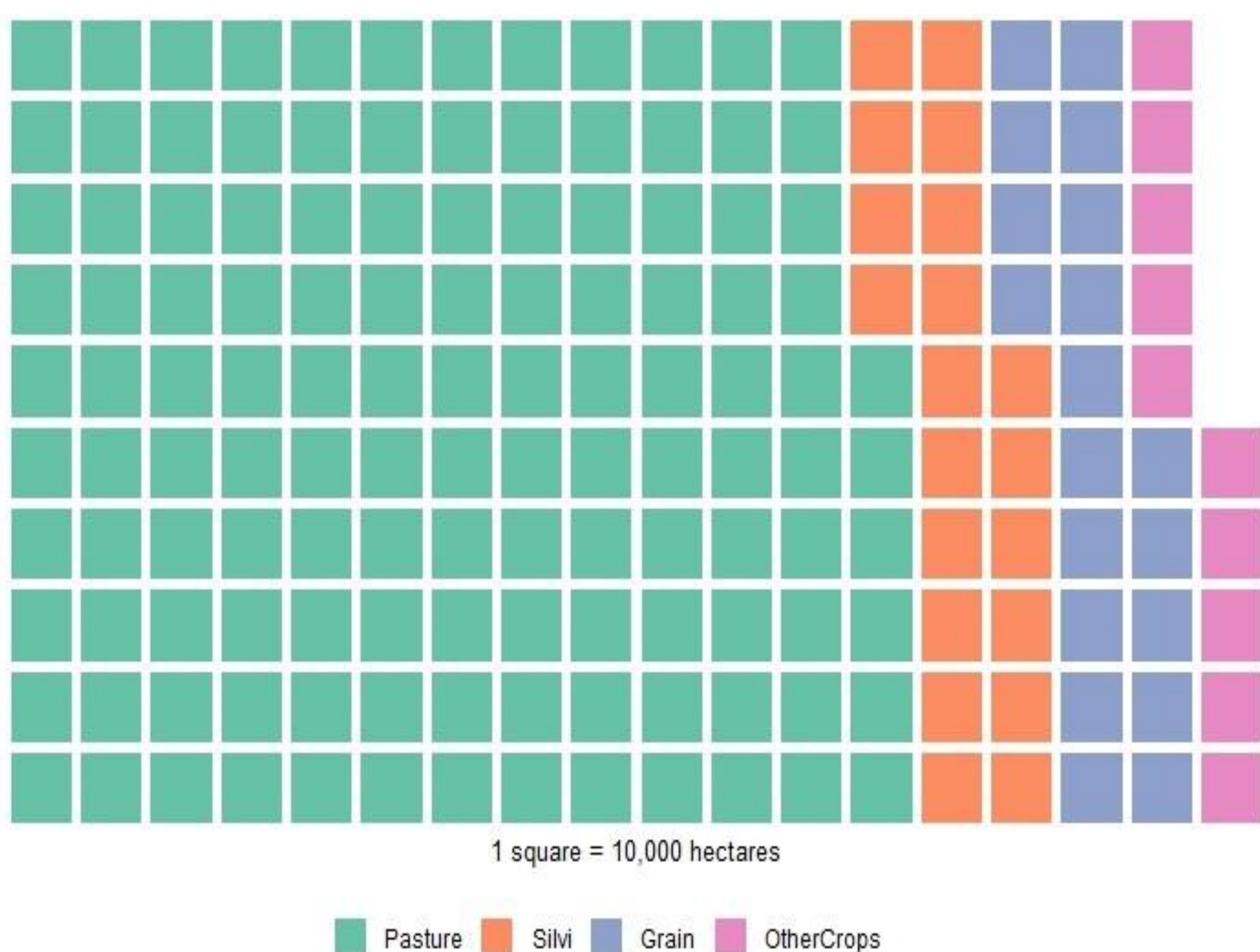


Figure 3. Land-use Composition

Discussion

- Opportunity exists to both incorporate the principles of circular food production to meet food production demands while reducing GHG emissions
- Allowing for limited silvo-pastoral production can sequester carbon to offset some of the GHG emissions associated with food production
 - While still providing pasture for young ruminants
- Replacing feed production which is dominant, with crop production replacing up to 10% of human digestible protein exports
 - Offsetting the demand for livestock production
- Feed for monogastrics production can be adequately replaced with the co-product of the food production from crop and livestock
 - Including other monogastrics blood and bone meal
 - Incentivized pig production from poultry systems

