Reducing GHG emissions and improving efficiency and profitability

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Our Farm

- 150 dairy cows
- 75 youngstock
- 1,250,000 kg milk per year
- 46 ha (38 ha grass, 8 ha maïze)

I aim to close the nutrient cycle where possible…

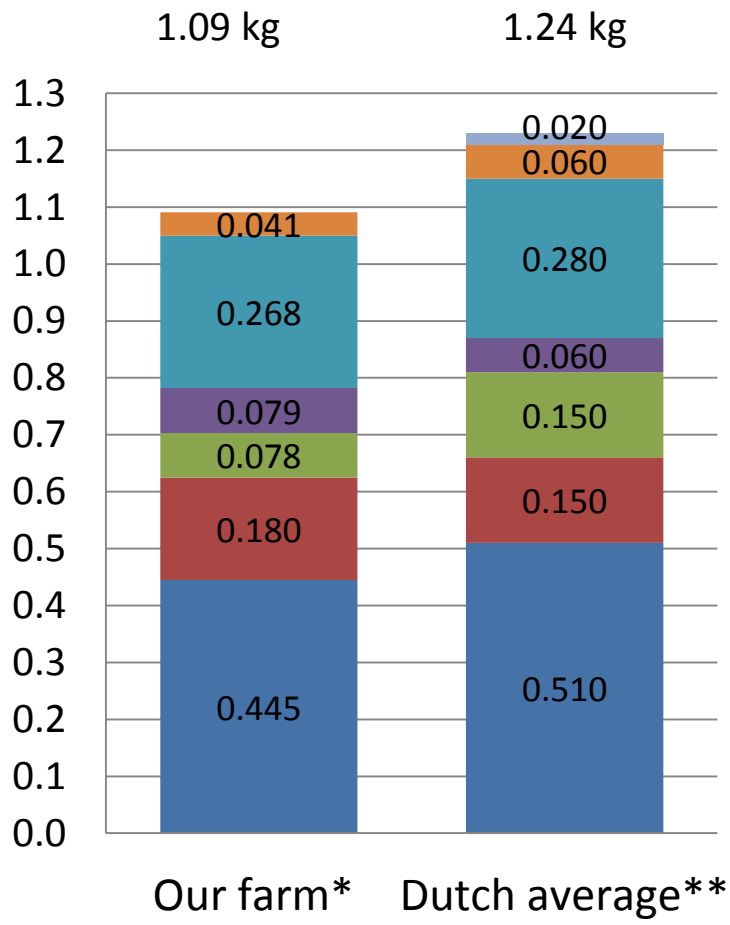
Closing the cycle

- Using a tool (annual nutrient cycle analyis)
- Identifying the emissions on the farm, together with other dairy farmers in a project
- A farm mitigation plan to improve our efficiency and to lower our GHG emissions

KRINGLOOP WIJZER

Vruchtbare Kringloop

For now, however, there are still emissions on our farm…



To meet 20% reduction goal we need to lower the average CFP to 1kg CO_{2eq}/kg Milk

- CO2 other purchased items
- CO2 artificial fertilizer
- CO2 purchased feed
- CO2 Energy use
- N20 soil and manure
- CH4 manure storage
- CH4 enteric fermentation

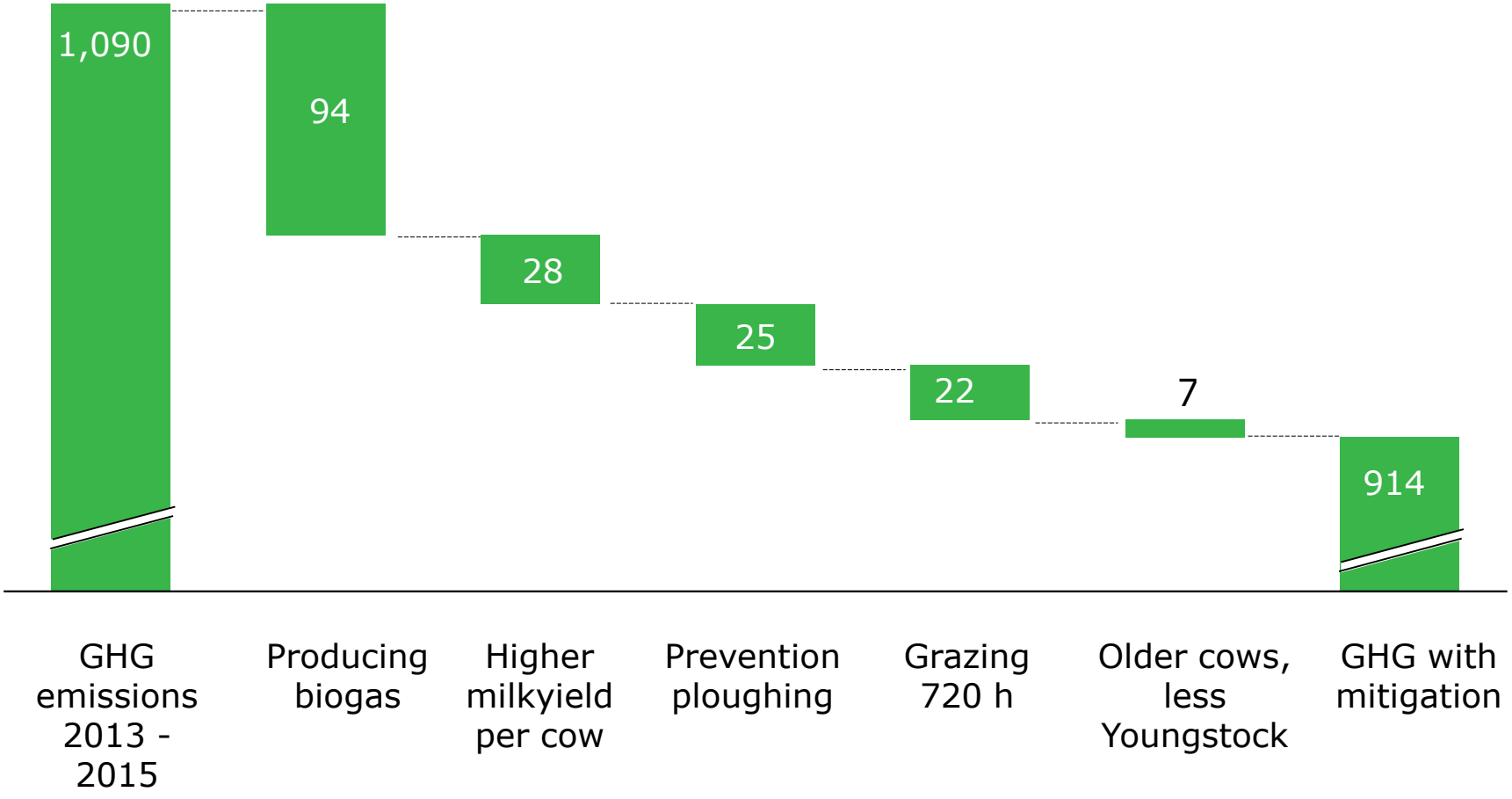
*Hospers & Vellinga 2016
** LEI 2016

In kg CO_{2eq}/kg Milk, GWP's: CH_4=28, N_20=265, Calculated following IDF 479/2015 and PEF ready

There are several options to lower the GHG emissions on our farm…

1. Producing biogas (long term)
2. Higher milkyield per cow, from 8,300 kg → 9,000 kg
3. Prevention ploughing up grassland
4. Start grazing 720 hours
5. Older cows, less youngstock → 15-20% replacement rate

Potential reduction of mitigation actions



The impact of these changes: over 50,000 euro more cashflow

- Higher milkyield: 25,900 euro
  - (700 kg x150 cows = 105,000 kg x 0.247 euro)
- Start grazing: 20,100 euro
  - (1,350,000 x 0.015 euro, other costs/benefits +/-)
- Older cows: 10,400 euro
  - (13 x depreciation cow 800 euro)

To lower our emissions, there will be challenges:

- To lower environmental emissions we need to be efficient
- For efficiency we need highly productive grassland and arable land
- For highly productive grassland we need derogation to the Nitrate Directive
- We need organic fertilizers to be able to
  - Maintain soil fertility (soil organic matter and soil biodiversity)
  - Lower the nutrient leakage

Conclusion

With efficient production, I can lower my GHG emissions and improve my farm income

However

- Need to know what we are talking about
- Lowering GHG emissions is a challenge
- Zero emissions are not possible

Thanks for your attention

Sources;

- Emission calculations based on KringloopWijzer (Wageningen UR) and carbon footprint model Farms Specific Footprint (ZuivelNL/ FrieslandCampina). Following IDF and PEF CR Dairy guidelines.
- Calculations by Jeroen Hospers (FrieslandCampina), Theun Vellinga (Wageningen UR) and Zwier van de Vegte (Wageningen UR)