



IRISH CATTLE BREEDING FEDERATION

GreenBreed - Collecting methane at Tully



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ICBF & Sheep Ireland
Genetics Conference 2018

Wednesday & Thursday
5th & 6th December
Hodson Bay Hotel,
Athlone

Sheep Ireland
www.sheep.ie

ICBF.com

'Sustainable Farming –
Progress through Genetics'



Department of
**Agriculture,
Food and the Marine**
An Roinn
**Talmhaíochta,
Bia agus Mara**



#ISGC18

G€N€ IR€LAND progeny test program

- **Background:** Progeny testing allows for increased accuracy in genetic evaluations.
- **Aim:** Collect information on commercial progeny from AI sires.
- Selection Process:
 - ICBF Database: G€N€ IR€LAND AI sires (15-20 progeny), Sire & MGS recorded, age & gender (bulls & steers)
 - On-Farm: Parentage verification, weight & health.
- Slaughter 500-600 progeny per annum.
- 2,269 (1343 bulls, 695 steers and 231 heifers) slaughtered since 2014



Measurements obtained

- Acclimatisation period: (30 days).
 - Vaccination IBR, BVD, RSV, PI3, Blackleg & other clostridia diseases.
- Performance test measures (90 day testing period).
 - Average daily gain (g/day), Feed conversion efficiency (DMI/ADG), Linear Scores, Scanned muscle and fat depth and intramuscular fat (mm) & Scrotal circumference (cm).
- Health & disease traits.
 - Recording lameness, genetic defects, pneumonia and other illnesses.
- Genomics.
 - Genotyped using customised chip.
- Age at slaughter
 - Bulls (15-20 months)
 - Steers (17-23 months of age)
 - Heifers (16-21 months of age)



GreenBreed

- Overall objective is to develop, validate and deploy the necessary tools and optimal strategies to achieve sustainable and quantifiable genetic gain in environmental and economic efficiency in dairy, beef and sheep. The project is a collaboration between, Teagasc, ICBF, UCD, CIT, WIT and industry partners.
- In Beef were looking at direct measures of animal efficiency (methane output, feed intake) and indirect measures (age of slaughter, weaning weight compared to live-weight of the cow, cow longevity).

Role of Tully:

1. Quantify the relationship between genetic merit for feed intake measured on growing animals indoors with feed intake at grass by deeply phenotyping a carefully selected cohort of very informative commercial beef animals.
2. Phenotype up to 2,000 growing beef (-dairy cross) cattle (and some adult cows) for methane emissions indoors including some of the animals phenotyped on grass.

Why Methane?

RTE News

HOME IRELAND WORLD BUSINESS SPORT PLAYER

World - Science and Technology

Ireland must cut carbon emissions by 20% by 2030

Wednesday 20 July 2016 12:45

13.00 to 13.25

1 AT&T News at One

- Ireland; To cut carbon emissions by 20%.
 - Agriculture currently responsible for almost 50% of total GHG emissions.

Agriculture: Emissions from farming increased by 2.7 per cent in 2016. The most significant drivers are higher dairy cow numbers (up 6.2 per cent), which reflects national plans to expand milk production. Dairy cow numbers have increased by 22 per cent in the past four years, while greenhouse gas emissions increased by 8 per cent over that time. *Taken from an Irish Times Article Mon, Nov 27, 2017*

THE IRISH TIMES

Tue, Sep 4, 2018

NEWS

SPORT

BUSINESS

OPINION

LIFE & STYLE

CULTURE

Environment > Heritage & Habitat | Renewable Ireland

Irish farming under pressure to reduce carbon emissions

Possible cost of €600m per annum after 2020 if there is no change in policy

Mon, Jun 11, 2018, 18:40

Kevin O'Sullivan Environment & Science Editor



Agriculture accounts for a third of Irish emissions. Photograph: Brenda Fitzsimons

FARM IRELAND

Tuesday 4 September 2018

NEWS AGRI-BUSINESS PROPERTY DAIRY TILLAGE BEEF SHEEP MA

Reducing emissions from agriculture:
'The facts are simple, the solutions are more complicated'

Methane

- Methane production occurs in the rumen and is a natural by-product fermentation
 - GWP potential of 25 times that of CO₂
 - Livestock produce 40% of global methane
- A group of rumen microbes, known as methanogens, produce methane
- Methane production captures 2-12% of the gross energy intake of feed
- Therefore, methane production results in less energy available for production (growth, milk production etc)
- Diet, feed intake, genetics all influence methane production!!!

GreenFeed System

- Estimates individual animal methane emissions
- RumenPredict – International collaboration (Teagasc): Aim is to link the rumen microbiome , host genetics and phenotype to benefit mitigation strategies
- GF identifies individual animals via RFID tag when animal uses feeder
- ~30 grams of feed dropped every 30s for 3 minutes (max 6 drops of feed)
- Animal emits methane in breath and estimated in-between feed drops
- Fan extracts emissions and passes air by sensor
- Sensor determines amount of methane expelled by animal in grams per day
- Animal feed periods spread across day





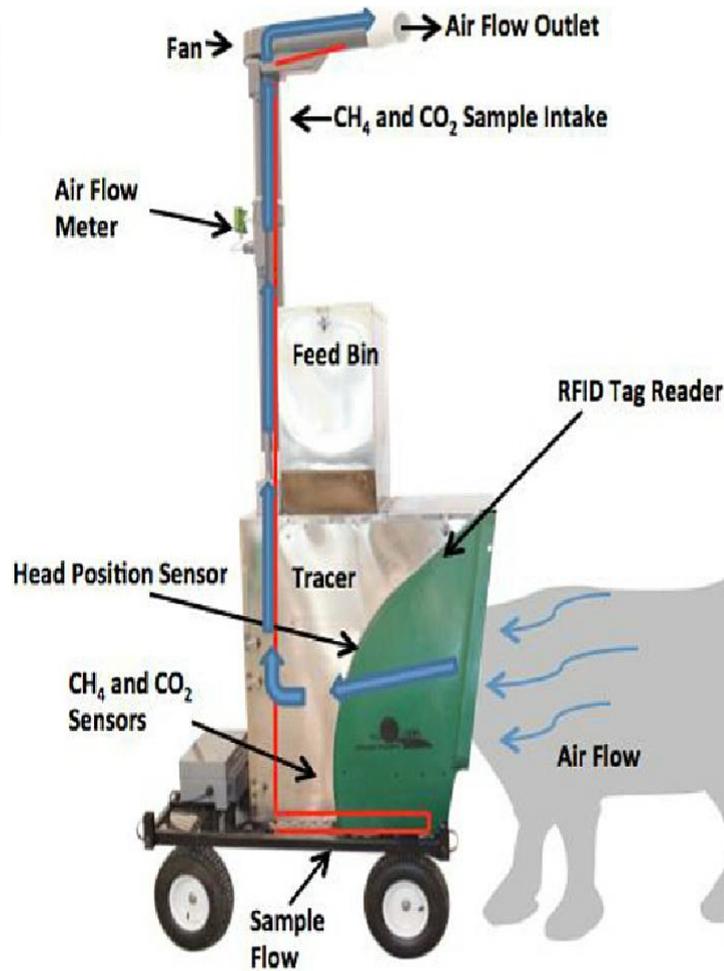
Gate to allow single animal access



Calibrating machine



Feed drop



Summary

- Methane data will be collected on all animals tested through Tully going forward with 4 new GreenFeed boxes being installed.
- Role of Tully in GreenBreed:
 1. Allow us to rank sires in terms of their environmental footprint by collecting relevant data for direct and indirect environmental traits.
 2. Collect feed intake and methane data on cows.
- Further information on the individual tasks within GreenBreed and RumenPredict can be seen in the poster session.



Our Farmer & Government Representation



Our AI & Milk Recording Organisations



Our Herdbooks



Acknowledging Our Members