Work Group 1

Methane-determining factors

WG1 Main tasks

…to compile :

a) an inventory and discuss possible factors associated with variation in methane production

b) standardized definitions for methane measurements

c) combined and integrated data into novel genetic models

WG1 *Inventory* Methane-determining factors

Email query to 42 addressees:

12/2/14 ⇨ reply: 4x

reminder: 25/3/14 ⇨ reply: 13x

17x

WG1 *Inventory* Methane measurements planned/available

Name	Country	Number
Leonhard Gruber	A	120
Frédéric Debareng	BE/IRL	452
Nico Peiren & Sam De Campeneere	BE	55
Michael Kreuzer	CH	100
Nina Krattenmacher	D	50
Björn Kuhla	D	160
Herman Swalve	D	3000
Jørgen Madsen	DK	260
Jan Lassen	DK	2500
David Yanez Ruis	ESP	75
Eva Ugarte	ESP	40
Yves Python	F	50
Diego Morgavi	F	450
Gilles Renand	F	112
Gilles Renand	F	200
Enyew Negussie	FI	200
Bruno Stefanon	I	1000
Biscarini, F	I	600
Eva Lewis	IRL	700
Yvette de Haas	NL	300
Marleen Visker	NL	2000
Adam Cieslak & Malgorzata Szumacher-Strabel	PL	300
Tomasz Strabel	PL	600
Phil Garnsworthy	Ruminomics	3700
Yan Tianhai	UK	1300
Eileen Wall	UK	
Kirsty Hammond	UK	416
Bertilsson,J.	SE	130
Britt Berglund	SE	500

14 countries **~19.370**

WG1 *Inventory*

...already available

Person	Country	Approx. number of animals
Leonhard Gruber	A	120
Frédéric Dehareng	BE/IRL	182/270
Michael Kreuzer	CH	100
Nina Krattenmacher	D	10
Björn Kuhla	D	100
Jørgen Madsen	DK	260
Jan Lassen	DK	2500
David Yanez Ruis	ESP	75
Yves Python	F	50
Gilles Renand	F	112
Diego Morgavi	F	450
Enyew Negussie	FI	200
Bruno Stefanon	I	1000
Yvette de Haas	NL	300
Britt Berglund	SE	500
Phil Garnsworthy	UK	3700
Yan Tianhai	UK	1300
Jan Bertilsson	SE	130
Kirsty Hammond	UK	416
Nico Peiren & Sam De Campeneere	BE	55
Eva Lewis	IRL	700
Eva Ugarte	ESP	40
	13 countries	**~13.170**

Does not consider animals measured repetitively

WG1 *Inventory*

Methods (planed to be) used

CH_4 yield – day based	n	Indicators	n
Hood System	~3000	milk MIR	~1500
Resp. Chamber		faecal archaeol	
SF_6		fatty acid profiles	
CH_4 yield – min based	**n**	**CH_4 concentration**	**n**
Greenfeed	~4.500	laser	~3000
Sniffer			

WG1 *Inventory*

Further animal-related information available

Measurement by	n (feed intake)	n (milk and weight)	n (genotype)	Mid and late lactation	Early lactation or dry-off
SF_6 only	780	932		y	
SF_6 or Greenfeed	272			y	
SF_6 or respiration chamber	1620			y	
sniffer only	280	2980	5600	y	
sniffer or Greenfeed	1000			y	
respiration chamber only	492	182	probably	y	y
Greenfeed only	660	600		y	
	~5.150	**~10.700**	**~5.600**		

WG1 *Inventory*

Methane Measurements planed

Person	Country	Breed	Method	Approx. number of animals
Björn Kuhla	D	HOL	Greenfeed	60
Herman Swalve	D	HOL	Laser	3000
Nina Krattenmacher	D	HOL	Faecal archaeol	40
Gilles Renand	F	BEEF	Greenfeed	180
Marleen Visker	NL	HOL	Sniffer	2000
Adam Cieslak & Malgorzata Szumacher-Strabel	PL	Polish HOL	IR-spectroscopy/laser	300
Tomasz Strabel	PL	HOL	Sniffer	600
Biscarini, F	IT	HOL	Greenfeed	600
	5 countries			**~6.800**

WG1
Inventory, next steps (according to tasks)

1) **…discussing possible factors associated with variation in methane production**
2) **…standardization between methane measurement methods????**
   ⇨ Collaborative work with WG 2 necessary!!!

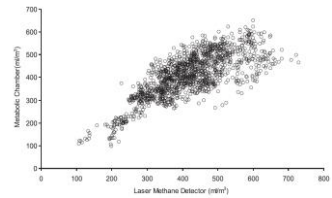
⇨ Quality and relationship between direct measurements and indicators???
⇨ Collaborative work with WG 3 necessary!!!

⇨Relationship between CH_4 concentration and CH_4 yield ?

⇨ Relationship between rumen CH_4 and whole-body CH_4 ? (Range 3-12%!)

⇨ Persistency and Repeatability ?

WG1
Inventory, next steps (according to tasks)



➡ Transfer into yields?

M. Chagunda, Animal 2013

⇨ Same issue with methane indicators (WG3)

WG1
plans for meetings (Skype, physical)

David:

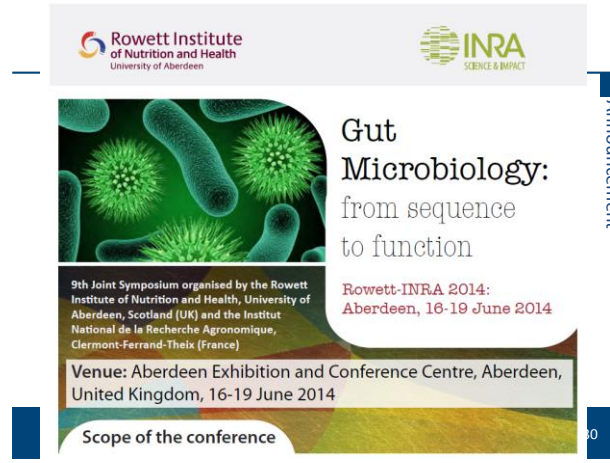
- Common WG1 and WG2 Workshop in Malaga (November 2014)
- Notes on FACCE-JPI Program on GHG Mitigation: "Global network for the development and maintenance of nutrition-related strategies for mitigation of methane and nitrous oxide emissions from ruminant livestock" (https://www.faccejpi.com/FACCE-Joint-activities/International-Call-on-Mitigation)

WG1
ongoing work

Activities in international programs (FACE-JPI) :

- Global Network (nutrition related strategies for the mitigation of methane and nitrous oxide emissions) project leader: A.N. Hristov
- RumenSTABILITY (understanding the development and control of stability in the rumen microbiome as a basis to reduce methanogenesis) project leader: R. Dewhurst
- Network and Database on Feed and Nutrition in relation to Greenhouse Gas Emissions (FNN) meeting at the ADSA/ASAS meeting July 20th 2014, Kansas, USA

Announcement



Announcement

cirad
INRA SCIENCE & IMPACT
IRD Institut de recherche pour le développement
AGROPOLIS INTERNATIONAL
WAGENINGEN UR For quality of life
CCAFS
UCDAVIS UNIVERSITY OF CALIFORNIA

SAVE THE DATE: March 16-18, 2015
Montpellier, France

Third Global Science Conference on Climate Smart Agriculture

LEIBNIZ INSTITUTE FOR FARM ANIMAL BIOLOGY

Announcement