Ref. Ares(2018)6625390 - 21/12/2018

Horizon 2020 Programme

INFRAIA-02-2017
Integrating Activities for Starting Communities

SmartCow: an integrated infrastructure for increased research capability and innovation in the European cattle sector

SmartCow
an integrated infrastructure for increased research capability and innovation in the European cattle sector

Project ID: 730924

Deliverable number: D1.4

Deliverable title: Catalogue of physical samples contained within a sample bank and the person responsible for gaining access to the data/sample bank

EC version : V1

Due date of milestone	**30/11/2018 (M10)**
Actual submission date	**21/12/2018 (M11)**

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2. Revision history

Version	Date	Modified by	Comments

3. Dissemination level

PU	Public	X
CO	Confidential , only for members of the consortium (including the Commission Services)	☐

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SmartCow
an integrated infrastructure for increased research capability and innovation in the European cattle sector

EXECUTIVE SUMMARY

Background	Individual research institutes collect data on various parameters which generate samples (e.g. blood, digestive contents, milk , meat, etc.). However, to date there is no individual database cataloguing what range of samples is taken along with the frequency of recording. Therefore, it would be very beneficial if there was a centralised database available which catalogued what samples were taken. This information could then be made available to a wide range of research centres. This can improve collaboration and also could provide insight into the samples being taken. Additionally, this could facilitate a number of institutes who wished to collaborate on a study examining a range of samples collected during animal trials. To ensure the feasibility of this approach research institutes within the SmartCow consortium were initially contacted and information collected. Once the data collection process was streamlined and dissemination methods agreed and created other EU research institutes and eventually research institutes outside of the EU can also be included. Collection of this data provides an insight into samples taken at each research centre, and provides a contact person to contact in regards each research centre's specific collection points. This will allow ease of access to individual research institutes data collection and generation of samples as a result.
Objectives	This deliverable falls under task 1.2 of WP1. The objective of task 1.2 was to describe and map research animal databases and existing sample banks, and their accessibility across the participating organisations.
Methods	A contact person from each research institute within the consortium was identified at the kick off meeting and their email address obtained. An exhaustive list of the sample recording frequency and resulting sample banks associated with each research institute was developed and an excel spread sheet created to collect the data. This included a name individual who is responsible for each sample bank within each research institute. Before sending to all project partners the file was sent to a smaller group of people involved in the project to review and identify any areas which were

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	missing or where more information was required. Once this sub-committee were satisfied with database it was sent to the people within the consortium whose email addresses were collected at the kick off meeting.
Results & implications	An inventory of the sample banks employed in SmartCow participating organisations has been developed. This includes an account of variables recorded and if physical samples are contained within a sample bank. Additionally, a register of those responsible for sample banks has also been created. By having the details of each individual responsible for each sample bank available, this will allow for ease of access to information for researchers or interested persons regarding individual sample banks within each research institute. Additionally, these individuals can be contacted for further information about each individual research institutes and their respective sample banks. This will inform interested persons as to whether these samples could potentially be available as a resource for other projects. Into the future, the database created can also be sent to research institutes outside of the SmartCow consortium to garner further information regarding available sample banks and samples collected within their research institutes.

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1 Background

Within Europe there are many research institutes collecting data on various parameters which generate samples (e.g. blood samples, digestive system samples, milk composition, meat composition, etc.). It would be beneficial if there was a database available which catalogued what samples were taken. This information could then be made available to a wide range of research centres. This can improve collaboration and also could provide insight into the samples being taken. Additionally, this could facilitate a number of institutes who wished to collaborate on a study examining a range of samples collected during animal trials.

To ensure the feasibility of this approach research institutes within the SmartCow consortium were initially contacted and information collected. Once the data collection process was streamlined and dissemination methods agreed and created (D1.2) other EU research institutes and eventually research institutes outside of the EU can also be included.

Collection of this data provides an insight into samples taken at each research centre, and provides a contact person to contact in regards each research centre's specific collection points.

2 Objective

This deliverable falls under task 1.2 of WP1. The objective of task 1.2 was to describe and map research animal databases and existing sample banks, and their accessibility across the participating organisations.

3 Methodology

To enable accurate and time efficient collection of the required data a contact person from each research institute within the consortium was identified at the kick off meeting and their email address obtained. The database was designed and sent to each of these people with a deadline by which it had to be filled in and returned.

An exhaustive list of the sample recording frequency and resulting sample banks associated with each research institute was developed and an excel spread sheet created to collect the data. This included a name individual who is responsible for each sample bank within each research institute.

3.1 Database construction

An exhaustive list of the samples collected at each research institute was developed and an excel spread sheet created to collect the data. The different headings under which extensive information was required were as per deliverable 1.3.

Before sending to all project partners the file was sent to a smaller group of people involved in the project to review and identify any areas which were missing or where more information was required. Once this

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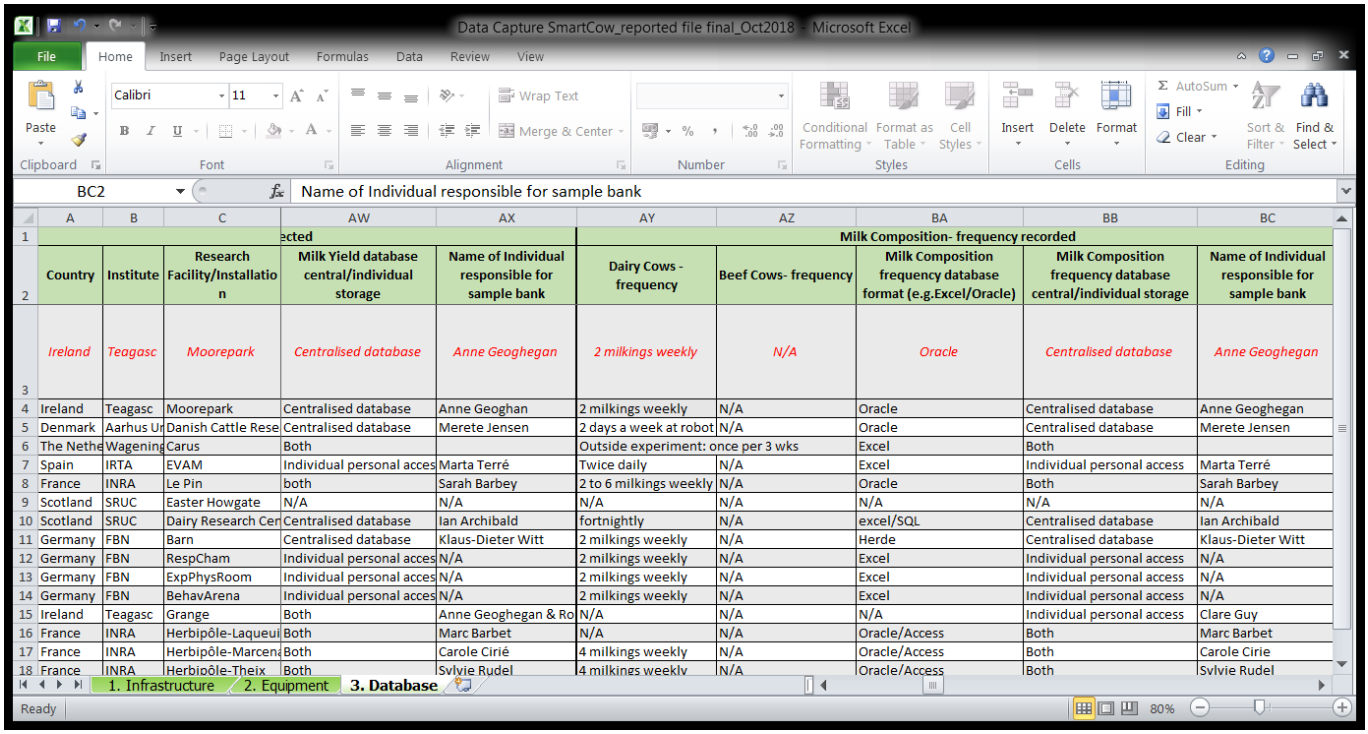
sub-committee was satisfied with database it was sent to the people within the consortium whose email addresses were collected at the kick off meeting.

(Note: Rather than send three separate documents requiring information all the information required for Tasks 1.1, 1.2 and 1.3 was created on different excel sheets within the one excel file)

3.1.1 Overview of data collected

To give an overview of the content of the database, the following are screen shots of the data which has been collected in regards to sample banks available at each research institute.



	A	B	C	AW	AX	AY	AZ	BA	BB	BC
1				ected		Milk Composition- frequency recorded				
2	Country	Institute	Research Facility/Installation	Milk Yield database central/individual storage	Name of Individual responsible for sample bank	Dairy Cows - frequency	Beef Cows- frequency	Milk Composition frequency database format (e.g.Excel/Oracle)	Milk Composition frequency database central/individual storage	Name of Individual responsible for sample bank
3	*Ireland*	*Teagasc*	*Moorepark*	*Centralised database*	*Anne Geoghegan*	*2 milkings weekly*	*N/A*	*Oracle*	*Centralised database*	*Anne Geoghegan*
4	Ireland	Teagasc	Moorepark	Centralised database	Anne Geoghan	2 milkings weekly	N/A	Oracle	Centralised database	Anne Geoghegan
5	Denmark	Aarhus Ur	Danish Cattle Rese	Centralised database	Merete Jensen	2 days a week at robot	N/A	Oracle	Centralised database	Merete Jensen
6	The Nethe	Wagening	Carus	Both		Outside experiment: once per 3 wks		Excel	Both	
7	Spain	IRTA	EVAM	Individual personal acces	Marta Terré	Twice daily	N/A	Excel	Individual personal access	Marta Terré
8	France	INRA	Le Pin	both	Sarah Barbey	2 to 6 milkings weekly	N/A	Oracle	Both	Sarah Barbey
9	Scotland	SRUC	Easter Howgate	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	Scotland	SRUC	Dairy Research Cer	Centralised database	Ian Archibald	fortnightly	N/A	excel/SQL	Centralised database	Ian Archibald
11	Germany	FBN	Barn	Centralised database	Klaus-Dieter Witt	2 milkings weekly	N/A	Herde	Centralised database	Klaus-Dieter Witt
12	Germany	FBN	RespCham	Individual personal acces	N/A	2 milkings weekly	N/A	Excel	Individual personal access	N/A
13	Germany	FBN	ExpPhysRoom	Individual personal acces	N/A	2 milkings weekly	N/A	Excel	Individual personal access	N/A
14	Germany	FBN	BehavArena	Individual personal acces	N/A	2 milkings weekly	N/A	Excel	Individual personal access	N/A
15	Ireland	Teagasc	Grange	Both	Anne Geoghegan & Ro	N/A	N/A	N/A	Individual personal access	Clare Guy
16	France	INRA	Herbipôle-Laqueui	Both	Marc Barbet	N/A	N/A	Oracle/Access	Both	Marc Barbet
17	France	INRA	Herbipôle-Marcen	Both	Carole Cirié	4 milkings weekly	N/A	Oracle/Access	Both	Carole Cirie
18	France	INRA	Herbipôle-Theix	Both	Sylvie Rudel	4 milkings weekly	N/A	Oracle/Access	Both	Sylvie Rudel

Figure 1. List of research institutes and their respective milk composition sampling frequency and individual responsible for the sample bank

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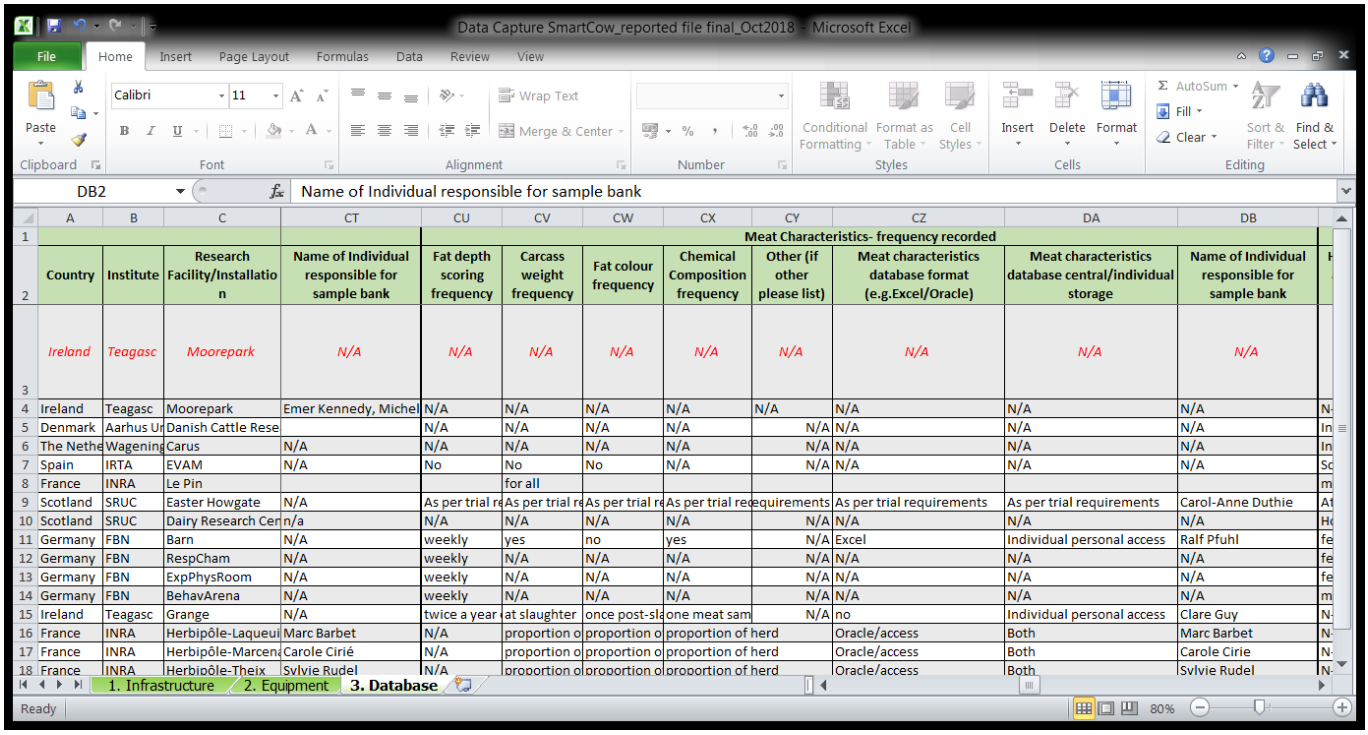


Data Capture SmartCow_reported file final_Oct2018 - Microsoft Excel

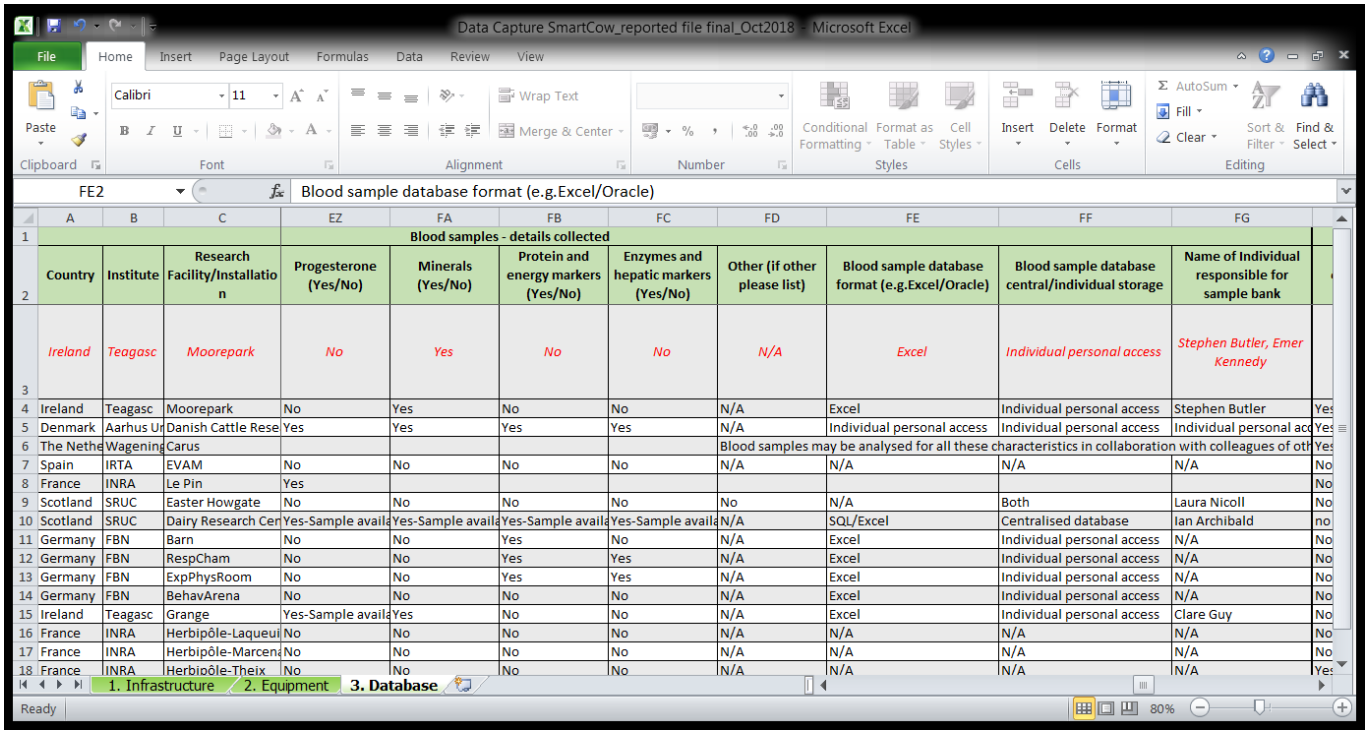
DB2 | Name of Individual responsible for sample bank

	A	B	C	CT	CU	CV	CW	CX	CY	CZ	DA	DB
1				Meat Characteristics- frequency recorded								
2	Country	Institute	Research Facility/Installation	Name of Individual responsible for sample bank	Fat depth scoring frequency	Carcass weight frequency	Fat colour frequency	Chemical Composition frequency	Other (if other please list)	Meat characteristics database format (e.g.Excel/Oracle)	Meat characteristics database central/individual storage	Name of Individual responsible for sample bank
3	*Ireland*	*Teagasc*	*Moorepark*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
4	Ireland	Teagasc	Moorepark	Emer Kennedy, Michel	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	Denmark	Aarhus Ur	Danish Cattle Rese		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	The Nethe	Wagening	Carus	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	Spain	IRTA	EVAM	N/A	No	No	No	N/A	N/A	N/A	N/A	N/A
8	France	INRA	Le Pin			for all						
9	Scotland	SRUC	Easter Howgate	N/A	As per trial re	As per trial re	As per trial re	As per trial re	equirements	As per trial requirements	As per trial requirements	Carol-Anne Duthie
10	Scotland	SRUC	Dairy Research Cen	n/a	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	Germany	FBN	Barn	N/A	weekly	yes	no	yes	N/A	Excel	Individual personal access	Ralf Pfuhl
12	Germany	FBN	RespCham	N/A	weekly	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	Germany	FBN	ExpPhysRoom	N/A	weekly	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	Germany	FBN	BehavArena	N/A	weekly	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	Ireland	Teagasc	Grange	N/A	twice a year	at slaughter	once post-sla	one meat sam	N/A	no	Individual personal access	Clare Guy
16	France	INRA	Herbipôle-Laqueui	Marc Barbet	N/A	proportion o	proportion o	proportion of herd		Oracle/access	Both	Marc Barbet
17	France	INRA	Herbipôle-Marcen	Carole Cirié	N/A	proportion o	proportion o	proportion of herd		Oracle/access	Both	Carole Cirie
18	France	INRA	Herbipôle-Theix	Sylvie Rudel	N/A	proportion o	proportion o	proportion of herd		Oracle/access	Both	Sylvie Rudel

1. Infrastructure | 2. Equipment | 3. Database

Ready

Figure 2. List of research institutes and their respective meat characteristics sample bank and individual responsible for the sample bank



Data Capture SmartCow_reported file final_Oct2018 - Microsoft Excel

FE2 | Blood sample database format (e.g.Excel/Oracle)

	A	B	C	EZ	FA	FB	FC	FD	FE	FF	FG
1				Blood samples - details collected							
2	Country	Institute	Research Facility/Installation	Progesterone (Yes/No)	Minerals (Yes/No)	Protein and energy markers (Yes/No)	Enzymes and hepatic markers (Yes/No)	Other (if other please list)	Blood sample database format (e.g.Excel/Oracle)	Blood sample database central/individual storage	Name of Individual responsible for sample bank
3	*Ireland*	*Teagasc*	*Moorepark*	*No*	*Yes*	*No*	*No*	*N/A*	*Excel*	*Individual personal access*	*Stephen Butler, Emer Kennedy*
4	Ireland	Teagasc	Moorepark	No	Yes	No	No	N/A	Excel	Individual personal access	Stephen Butler
5	Denmark	Aarhus Ur	Danish Cattle Rese	Yes	Yes	Yes	Yes	N/A	Individual personal access	Individual personal access	Individual personal acc
6	The Nethe	Wagening	Carus					Blood samples may be analysed for all these characteristics in collaboration with colleagues of oth			
7	Spain	IRTA	EVAM	No	No	No	No	N/A	N/A	N/A	N/A
8	France	INRA	Le Pin	Yes							
9	Scotland	SRUC	Easter Howgate	No	No	No	No	No	N/A	Both	Laura Nicoll
10	Scotland	SRUC	Dairy Research Cen	Yes-Sample availa	Yes-Sample availa	Yes-Sample availa	Yes-Sample availa	N/A	SQL/Excel	Centralised database	Ian Archibald
11	Germany	FBN	Barn	No	No	Yes	No	N/A	Excel	Individual personal access	N/A
12	Germany	FBN	RespCham	No	No	Yes	Yes	N/A	Excel	Individual personal access	N/A
13	Germany	FBN	ExpPhysRoom	No	No	Yes	Yes	N/A	Excel	Individual personal access	N/A
14	Germany	FBN	BehavArena	No	No	No	No	N/A	Excel	Individual personal access	N/A
15	Ireland	Teagasc	Grange	Yes-Sample availa	Yes	No	No	N/A	Excel	Individual personal access	Clare Guy
16	France	INRA	Herbipôle-Laqueui	No	No	No	No	N/A	N/A	N/A	N/A
17	France	INRA	Herbipôle-Marcen	No	No	No	No	N/A	N/A	N/A	N/A
18	France	INRA	Herbipôle-Theix	No	No	No	No	N/A	N/A	N/A	N/A

1. Infrastructure | 2. Equipment | 3. Database

Ready

Figure 3. List of research institutes and their respective blood sample database and individual responsible for the sample bank

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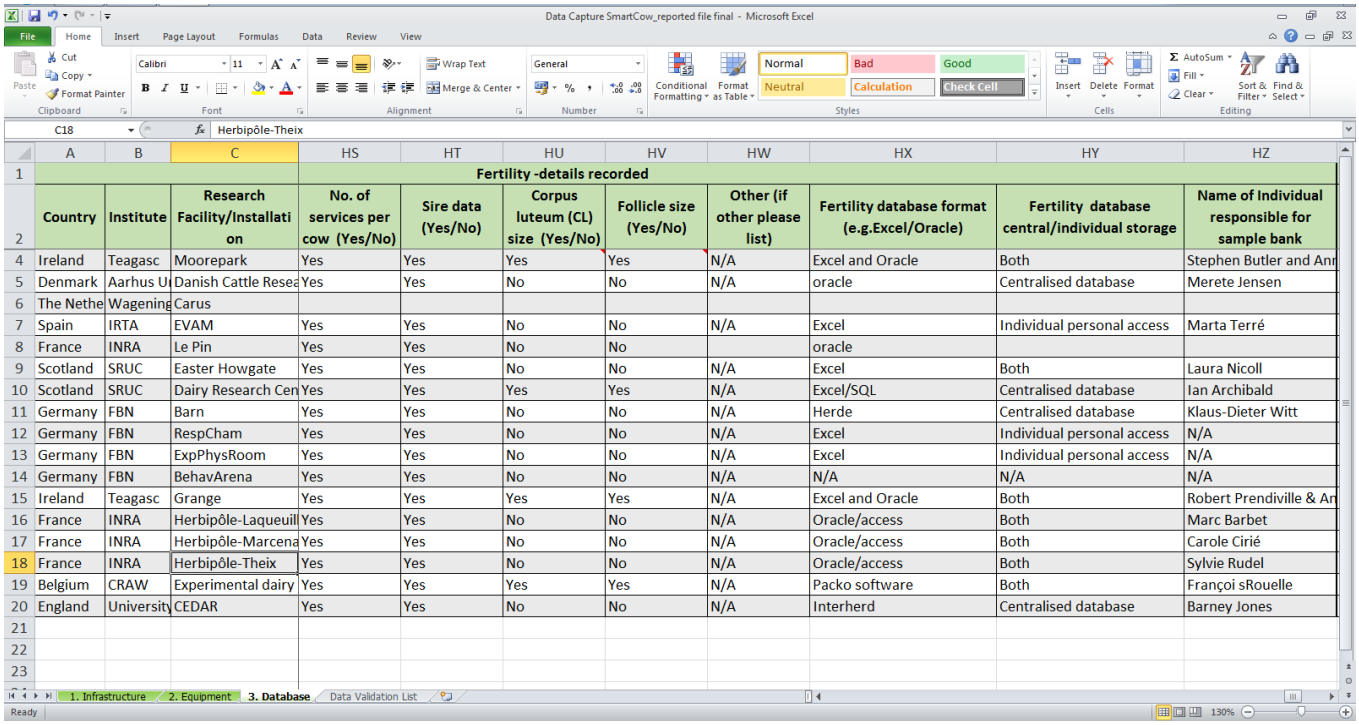
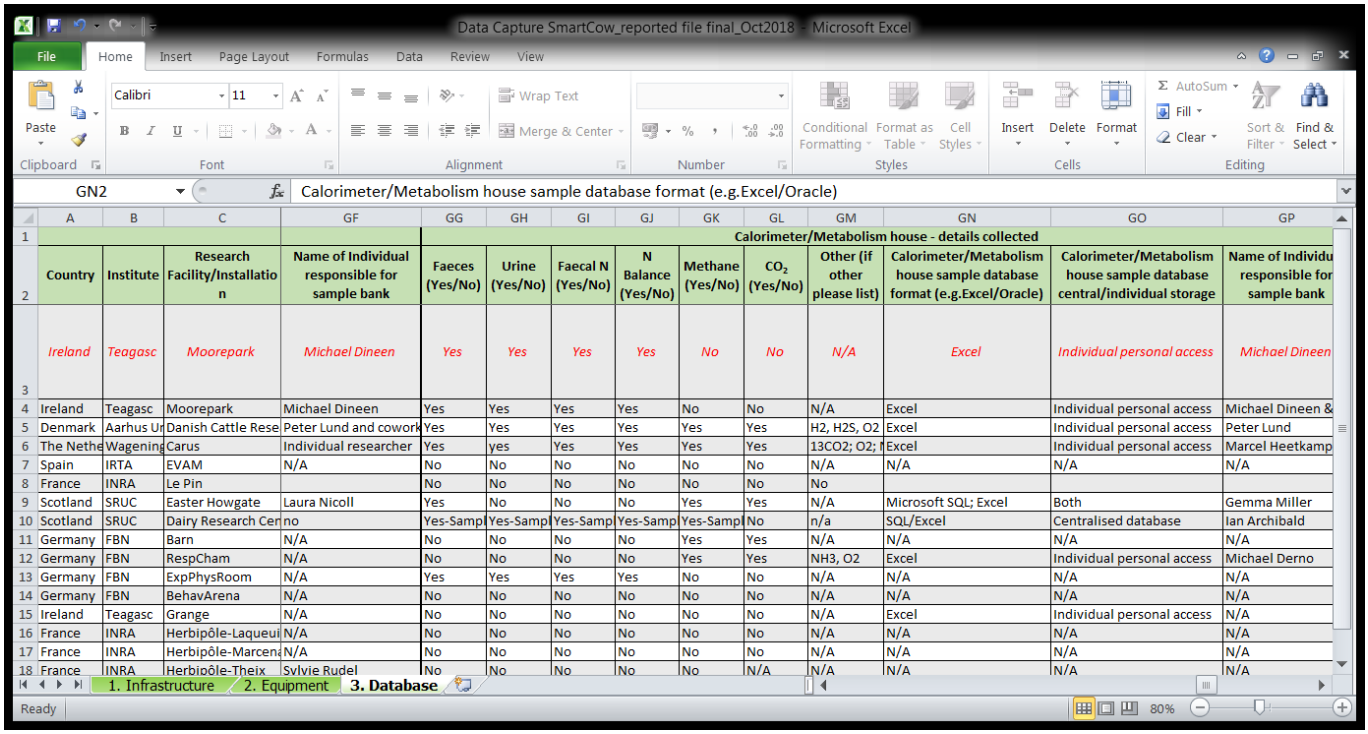


	A	B	C	HS	HT	HU	HV	HW	HX	HY	HZ
1				Fertility -details recorded							
2	Country	Institute	Research Facility/Installation	No. of services per cow (Yes/No)	Sire data (Yes/No)	Corpus luteum (CL) size (Yes/No)	Follicle size (Yes/No)	Other (if other please list)	Fertility database format (e.g.Excel/Oracle)	Fertility database central/individual storage	Name of Individual responsible for sample bank
4	Ireland	Teagasc	Moorepark	Yes	Yes	Yes	Yes	N/A	Excel and Oracle	Both	Stephen Butler and Anr
5	Denmark	Aarhus U	Danish Cattle Resea	Yes	Yes	No	No	N/A	oracle	Centralised database	Merete Jensen
6	The Nethe	Wagening	Carus								
7	Spain	IRTA	EVAM	Yes	Yes	No	No	N/A	Excel	Individual personal access	Marta Terré
8	France	INRA	Le Pin	Yes	Yes	No	No		oracle		
9	Scotland	SRUC	Easter Howgate	Yes	Yes	No	No	N/A	Excel	Both	Laura Nicoll
10	Scotland	SRUC	Dairy Research Cen	Yes	Yes	Yes	Yes	N/A	Excel/SQL	Centralised database	Ian Archibald
11	Germany	FBN	Barn	Yes	Yes	No	No	N/A	Herde	Centralised database	Klaus-Dieter Witt
12	Germany	FBN	RespCham	Yes	Yes	No	No	N/A	Excel	Individual personal access	N/A
13	Germany	FBN	ExpPhysRoom	Yes	Yes	No	No	N/A	Excel	Individual personal access	N/A
14	Germany	FBN	BehavArena	Yes	Yes	No	No	N/A	N/A	N/A	N/A
15	Ireland	Teagasc	Grange	Yes	Yes	Yes	Yes	N/A	Excel and Oracle	Both	Robert Prendiville & An
16	France	INRA	Herbipôle-Laqueuill	Yes	Yes	No	No	N/A	Oracle/access	Both	Marc Barbet
17	France	INRA	Herbipôle-Marcena	Yes	Yes	No	No	N/A	Oracle/access	Both	Carole Cirié
18	France	INRA	Herbipôle-Theix	Yes	Yes	No	No	N/A	Oracle/access	Both	Sylvie Rudel
19	Belgium	CRAW	Experimental dairy	Yes	Yes	Yes	Yes	N/A	Packo software	Both	Françoi sRouelle
20	England	University	CEDAR	Yes	Yes	No	No	N/A	Interherd	Centralised database	Barney Jones

Figure 4. List of research institutes and their respective digestive sample database and individual responsible for the sample bank



	A	B	C	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP
1					Calorimeter/Metabolism house - details collected									
2	Country	Institute	Research Facility/Installation	Name of Individual responsible for sample bank	Faeces (Yes/No)	Urine (Yes/No)	Faecal N (Yes/No)	N Balance (Yes/No)	Methane (Yes/No)	CO_2 (Yes/No)	Other (if other please list)	Calorimeter/Metabolism house sample database format (e.g.Excel/Oracle)	Calorimeter/Metabolism house sample database central/individual storage	Name of Individu responsible for sample bank
3	*Ireland*	*Teagasc*	*Moorepark*	*Michael Dineen*	*Yes*	*Yes*	*Yes*	*Yes*	*No*	*No*	*N/A*	*Excel*	*Individual personal access*	*Michael Dineen*
4	Ireland	Teagasc	Moorepark	Michael Dineen	Yes	Yes	Yes	Yes	No	No	N/A	Excel	Individual personal access	Michael Dineen &
5	Denmark	Aarhus Ur	Danish Cattle Rese	Peter Lund and cowork	Yes	Yes	Yes	Yes	Yes	Yes	H2, H2S, O2	Excel	Individual personal access	Peter Lund
6	The Nethe	Wagening	Carus	Individual researcher	Yes	yes	Yes	Yes	Yes	Yes	13CO2; O2; !	Excel	Individual personal access	Marcel Heetkamp
7	Spain	IRTA	EVAM	N/A	No	No	No	No	No	No	N/A	N/A	N/A	N/A
8	France	INRA	Le Pin		No	No	No	No	No	No	No			
9	Scotland	SRUC	Easter Howgate	Laura Nicoll	Yes	No	No	No	Yes	Yes	N/A	Microsoft SQL; Excel	Both	Gemma Miller
10	Scotland	SRUC	Dairy Research Cen	no	Yes-Sampl	Yes-Sampl	Yes-Sampl	Yes-Sampl	Yes-Sampl	No	n/a	SQL/Excel	Centralised database	Ian Archibald
11	Germany	FBN	Barn	N/A	No	No	No	No	Yes	Yes	N/A	N/A	N/A	N/A
12	Germany	FBN	RespCham	N/A	No	No	No	No	Yes	Yes	NH3, O2	Excel	Individual personal access	Michael Derno
13	Germany	FBN	ExpPhysRoom	N/A	Yes	Yes	Yes	Yes	No	No	N/A	N/A	N/A	N/A
14	Germany	FBN	BehavArena	N/A	No	No	No	No	No	No	N/A	N/A	N/A	N/A
15	Ireland	Teagasc	Grange	N/A	No	No	No	No	No	No	N/A	Excel	Individual personal access	N/A
16	France	INRA	Herbipôle-Laqueui	N/A	No	No	No	No	No	No	N/A	N/A	N/A	N/A
17	France	INRA	Herbipôle-Marcena	N/A	No	No	No	No	No	No	N/A	N/A	N/A	N/A
18	France	INRA	Herbipôle-Theix	Sylvie Rudel	No	No	No	No	No	No	N/A	N/A	N/A	N/A

Figure 5. List of research institutes and their respective calorimeter/metabolism house sample database and individual responsible for the sample bank

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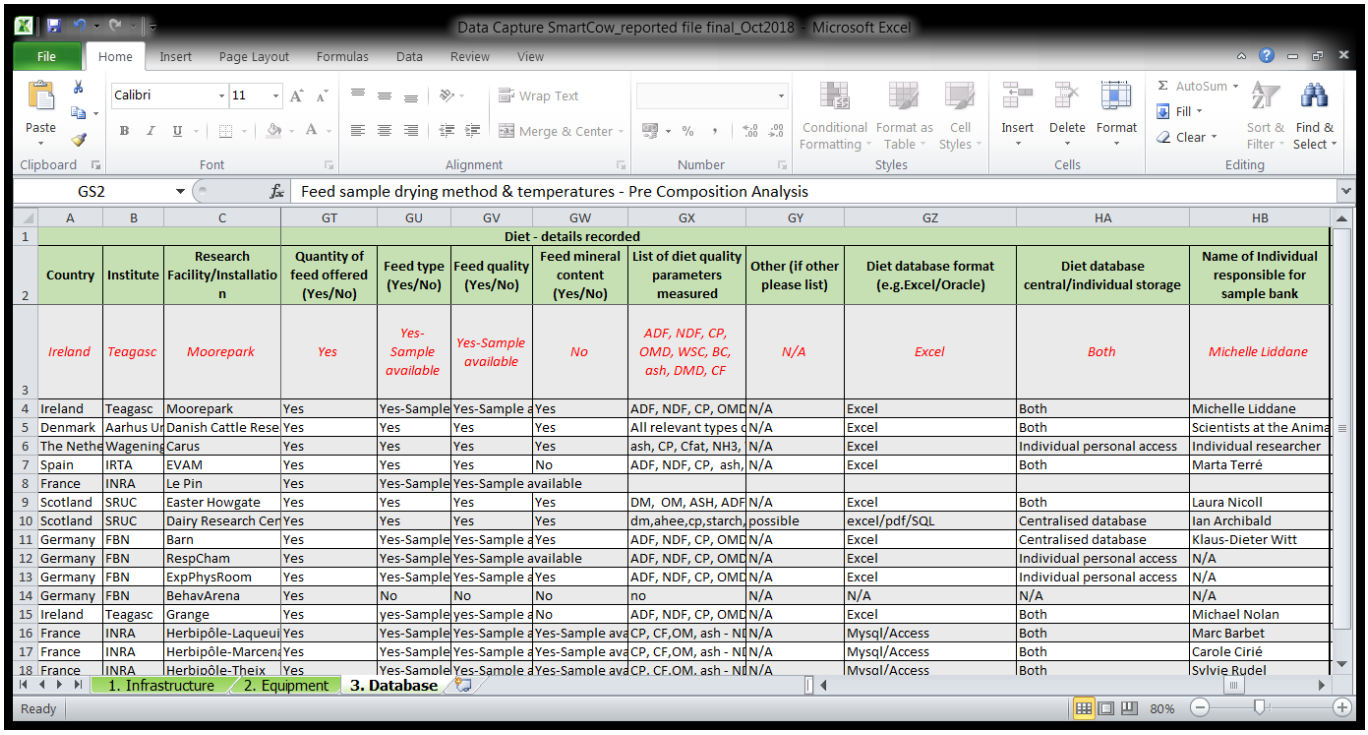


Data Capture SmartCow_reported file final_Oct2018 - Microsoft Excel

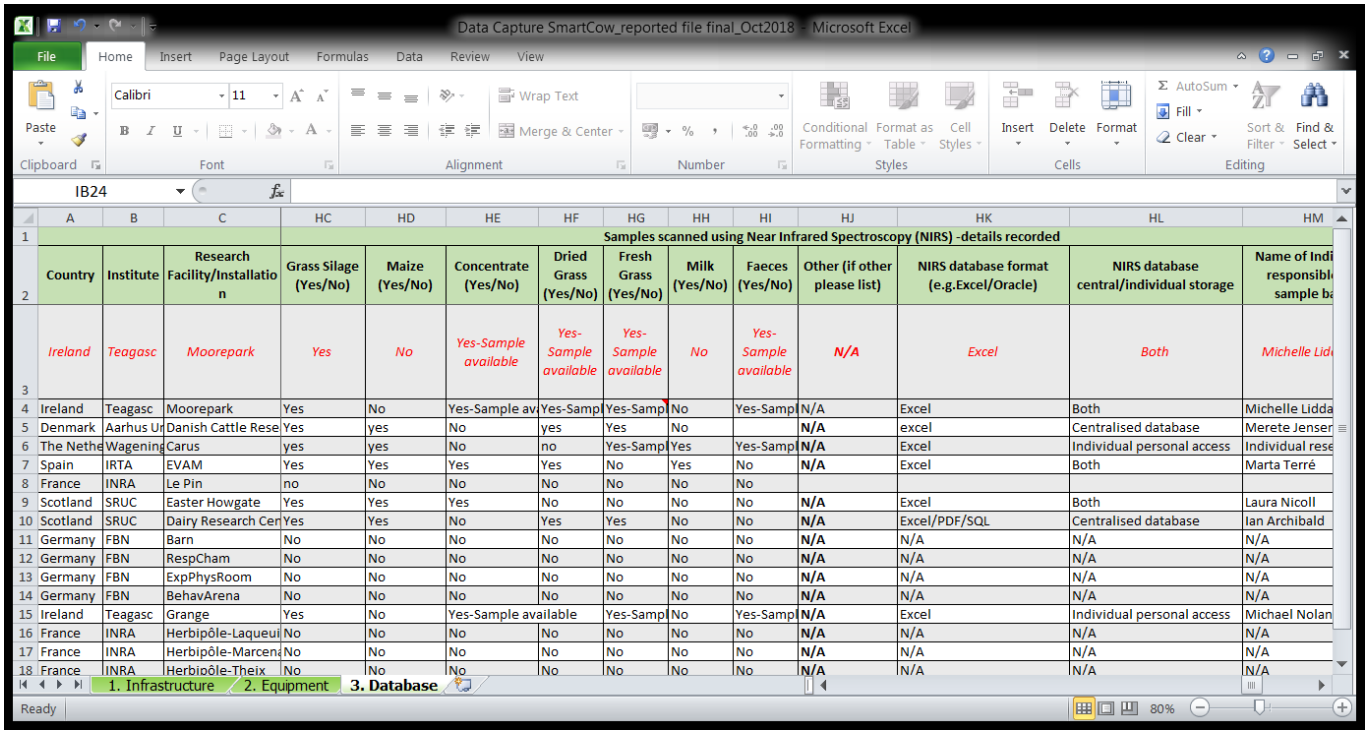
GS2: Feed sample drying method & temperatures - Pre Composition Analysis

	A	B	C	GT	GU	GV	GW	GX	GY	GZ	HA	HB
1				Diet - details recorded								
2	Country	Institute	Research Facility/Installation	Quantity of feed offered (Yes/No)	Feed type (Yes/No)	Feed quality (Yes/No)	Feed mineral content (Yes/No)	List of diet quality parameters measured	Other (if other please list)	Diet database format (e.g.Excel/Oracle)	Diet database central/individual storage	Name of Individual responsible for sample bank
3	*Ireland*	*Teagasc*	*Moorepark*	*Yes*	*Yes-Sample available*	*Yes-Sample available*	*No*	*ADF, NDF, CP, OMD, WSC, BC, ash, DMD, CF*	*N/A*	*Excel*	*Both*	*Michelle Liddane*
4	Ireland	Teagasc	Moorepark	Yes	Yes-Sample	Yes-Sample a	Yes	ADF, NDF, CP, OMD	N/A	Excel	Both	Michelle Liddane
5	Denmark	Aarhus Ur	Danish Cattle Rese	Yes	Yes	Yes	Yes	All relevant types c	N/A	Excel	Both	Scientists at the Anima
6	The Nethe	Wagening	Carus	Yes	Yes	Yes	Yes	ash, CP, Cfat, NH3,	N/A	Excel	Individual personal access	Individual researcher
7	Spain	IRTA	EVAM	Yes	Yes	Yes	No	ADF, NDF, CP, ash,	N/A	Excel	Both	Marta Terré
8	France	INRA	Le Pin	Yes	Yes-Sample	Yes-Sample available						
9	Scotland	SRUC	Easter Howgate	Yes	Yes	Yes	Yes	DM, OM, ASH, ADF	N/A	Excel	Both	Laura Nicoll
10	Scotland	SRUC	Dairy Research Cer	Yes	Yes	Yes	Yes	dm,ahee,cp,starch,	possible	excel/pdf/SQL	Centralised database	Ian Archibald
11	Germany	FBN	Barn	Yes	Yes-Sample	Yes-Sample a	Yes	ADF, NDF, CP, OMD	N/A	Excel	Centralised database	Klaus-Dieter Witt
12	Germany	FBN	RespCham	Yes	Yes-Sample	Yes-Sample available		ADF, NDF, CP, OMD	N/A	Excel	Individual personal access	N/A
13	Germany	FBN	ExpPhysRoom	Yes	Yes-Sample	Yes-Sample a	Yes	ADF, NDF, CP, OMD	N/A	Excel	Individual personal access	N/A
14	Germany	FBN	BehavArena	Yes	No	No	No	no	N/A	N/A	N/A	N/A
15	Ireland	Teagasc	Grange	Yes	yes-Sample	yes-Sample a	No	ADF, NDF, CP, OMD	N/A	Excel	Both	Michael Nolan
16	France	INRA	Herbipôle-Laqueui	Yes	Yes-Sample	Yes-Sample a	Yes-Sample ava	CP, CF,OM, ash - NI	N/A	Mysql/Access	Both	Marc Barbet
17	France	INRA	Herbipôle-Marcen	Yes	Yes-Sample	Yes-Sample a	Yes-Sample ava	CP, CF,OM, ash - NI	N/A	Mysql/Access	Both	Carole Cirié
18	France	INRA	Herbipôle-Theix	Yes	Yes-Sample	Yes-Sample a	Yes-Sample ava	CP, CF,OM, ash - NI	N/A	Mysql/Access	Both	Sylvie Rudel

1. Infrastructure | 2. Equipment | 3. Database

Ready 80%

Figure 6. List of research institutes and their respective diet sample database and individual responsible for the sample bank



Data Capture SmartCow_reported file final_Oct2018 - Microsoft Excel

IB24

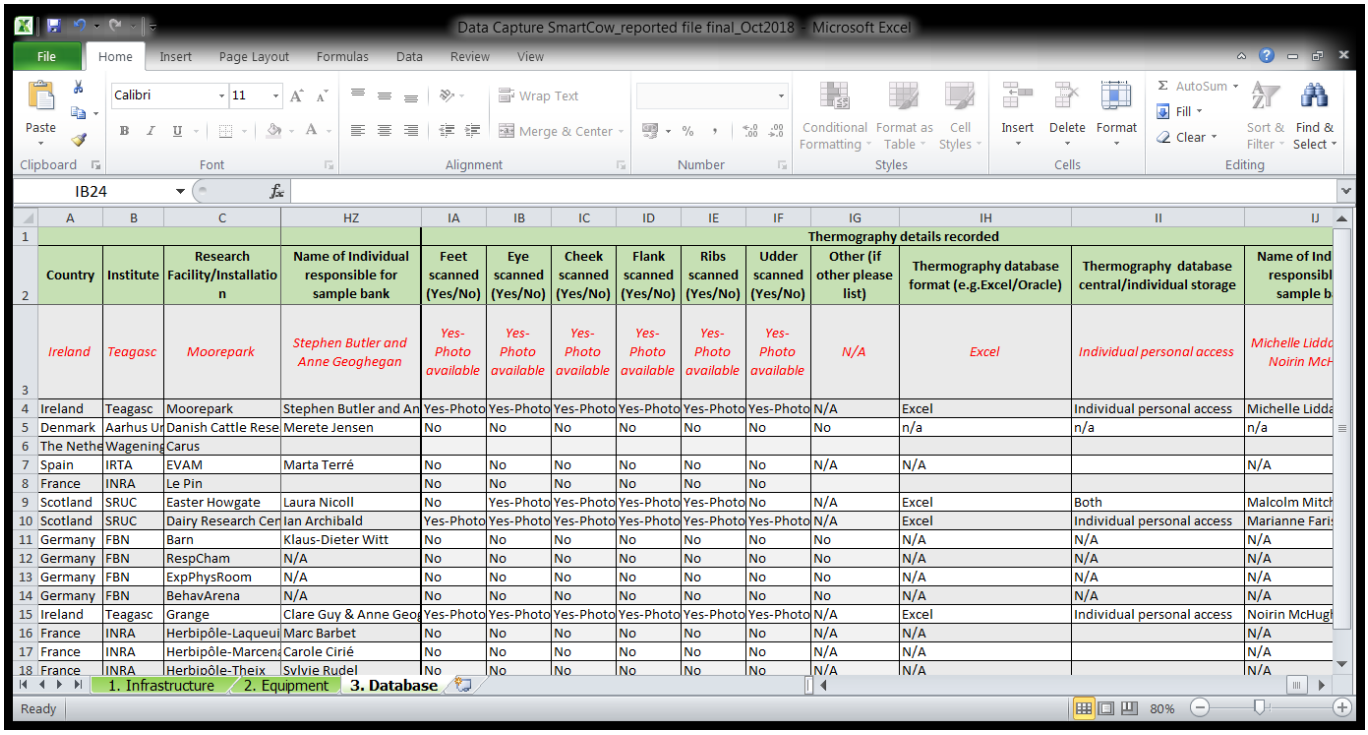
	A	B	C	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM
1				Samples scanned using Near Infrared Spectroscopy (NIRS) -details recorded										
2	Country	Institute	Research Facility/Installation	Grass Silage (Yes/No)	Maize (Yes/No)	Concentrate (Yes/No)	Dried Grass (Yes/No)	Fresh Grass (Yes/No)	Milk (Yes/No)	Faeces (Yes/No)	Other (if other please list)	NIRS database format (e.g.Excel/Oracle)	NIRS database central/individual storage	Name of Indi responsibl sample ba
3	*Ireland*	*Teagasc*	*Moorepark*	*Yes*	*No*	*Yes-Sample available*	*Yes-Sample available*	*Yes-Sample available*	*No*	*Yes-Sample available*	*N/A*	*Excel*	*Both*	*Michelle Lid*
4	Ireland	Teagasc	Moorepark	Yes	No	Yes-Sample av	Yes-Sampl	Yes-Sampl	No	Yes-Sampl	N/A	Excel	Both	Michelle Lidda
5	Denmark	Aarhus Ur	Danish Cattle Rese	Yes	yes	No	yes	Yes	No		**N/A**	excel	Centralised database	Merete Jensen
6	The Nethe	Wagening	Carus	yes	yes	No	no	Yes-Sampl	Yes	Yes-Sampl	**N/A**	Excel	Individual personal access	Individual rese
7	Spain	IRTA	EVAM	Yes	Yes	Yes	Yes	No	Yes	No	**N/A**	Excel	Both	Marta Terré
8	France	INRA	Le Pin	no	No	No	No	No	No	No				
9	Scotland	SRUC	Easter Howgate	Yes	Yes	Yes	No	No	No	No	**N/A**	Excel	Both	Laura Nicoll
10	Scotland	SRUC	Dairy Research Cer	Yes	Yes	No	Yes	Yes	No	No	**N/A**	Excel/PDF/SQL	Centralised database	Ian Archibald
11	Germany	FBN	Barn	No	No	No	No	No	No	No	**N/A**	N/A	N/A	N/A
12	Germany	FBN	RespCham	No	No	No	No	No	No	No	**N/A**	N/A	N/A	N/A
13	Germany	FBN	ExpPhysRoom	No	No	No	No	No	No	No	**N/A**	N/A	N/A	N/A
14	Germany	FBN	BehavArena	No	No	No	No	No	No	No	**N/A**	N/A	N/A	N/A
15	Ireland	Teagasc	Grange	Yes	No	Yes-Sample available		Yes-Sampl	No	Yes-Sampl	**N/A**	Excel	Individual personal access	Michael Nolan
16	France	INRA	Herbipôle-Laqueui	No	No	No	No	No	No	No	**N/A**	N/A	N/A	N/A
17	France	INRA	Herbipôle-Marcen	No	No	No	No	No	No	No	**N/A**	N/A	N/A	N/A
18	France	INRA	Herbipôle-Theix	No	No	No	No	No	No	No	**N/A**	N/A	N/A	N/A

1. Infrastructure | 2. Equipment | 3. Database

Ready 80%

Figure 7. List of research institutes and their respective database for samples scanned using Near Infrared Spectroscopy (NIRS) and individual responsible for the sample bank

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement N°730924



Data Capture SmartCow_reported file final_Oct2018 - Microsoft Excel

Country	Institute	Research Facility/Installation	Name of Individual responsible for sample bank	Thermography details recorded: Feet scanned (Yes/No)	Eye scanned (Yes/No)	Cheek scanned (Yes/No)	Flank scanned (Yes/No)	Ribs scanned (Yes/No)	Udder scanned (Yes/No)	Other (if other please list)	Thermography database format (e.g.Excel/Oracle)	Thermography database central/individual storage	Name of Individual responsible sample b
Ireland	*Teagasc*	*Moorepark*	*Stephen Butler and Anne Geoghegan*	*Yes-Photo available*	*Yes-Photo available*	*Yes-Photo available*	*Yes-Photo available*	*Yes-Photo available*	*Yes-Photo available*	*N/A*	*Excel*	*Individual personal access*	*Michelle Lidd Noirin Mc*
Ireland	Teagasc	Moorepark	Stephen Butler and An	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	N/A	Excel	Individual personal access	Michelle Lidd
Denmark	Aarhus Ur	Danish Cattle Rese	Merete Jensen	No	No	No	No	No	No	No	n/a	n/a	n/a
The Nethe	Wagening	Carus											
Spain	IRTA	EVAM	Marta Terré	No	No	No	No	No	No	N/A	N/A		N/A
France	INRA	Le Pin		No	No	No	No	No	No				
Scotland	SRUC	Easter Howgate	Laura Nicoll	No	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	No	N/A	Excel	Both	Malcolm Mitch
Scotland	SRUC	Dairy Research Cen	Ian Archibald	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	N/A	Excel	Individual personal access	Marianne Fari
Germany	FBN	Barn	Klaus-Dieter Witt	No	No	No	No	No	No	No	N/A	N/A	N/A
Germany	FBN	RespCham	N/A	No	No	No	No	No	No	No	N/A	N/A	N/A
Germany	FBN	ExpPhysRoom	N/A	No	No	No	No	No	No	No	N/A	N/A	N/A
Germany	FBN	BehavArena	N/A	No	No	No	No	No	No	No	N/A	N/A	N/A
Ireland	Teagasc	Grange	Clare Guy & Anne Geog	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	Yes-Photo	N/A	Excel	Individual personal access	Noirin McHug
France	INRA	Herbipôle-Laqueui	Marc Barbet	No	No	No	No	No	No	N/A	N/A		N/A
France	INRA	Herbipôle-Marcen	Carole Cirié	No	No	No	No	No	No	N/A	N/A		N/A
France	INRA	Herbipôle-Theix	Sylvie Rudel	No	No	No	No	No	No	N/A	N/A		N/A

Figure 8. List of research institutes and their respective database for thermography details recorded

4 Results and Implications

An inventory of the sample banks employed in SmartCow participating organisations has been developed. This includes an account of variables recorded and if physical samples are contained within a sample bank. Additionally, a register of those responsible for sample banks has also been created.

By having the details of each individual responsible for each sample bank available, this will allow for ease of access to information for researchers or interested persons regarding individual sample banks within each research institute. Additionally, these individuals can be contacted for further information about each individual research institute and their respective sample banks. This will inform interested persons as to whether these samples could potentially be available as a resource within SmartCow and for other projects.

Into the future, the database created can also be sent to research institutes outside of the SmartCow consortium to garner further information regarding available sample banks and samples collected within their research institutes.

This will allow a more exhaustive list of samples banks and samples and methodologies to be established (milestones in year 2, 3 and 4 of the project). This will allow existing infrastructures to update their data in the database. Beyond the SmartCow project, the database can be reissued in future infrastructure projects.

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