2014 STATISTICS OF EMBRYO COLLECTION AND TRANSFER IN DOMESTIC FARM ANIMALS

Collated by George Perry, Chairperson – IETS Data Retrieval Committee (gperry47@gmail.com)

1. EXECUTIVE SUMMARY

The International Embryo Transfer Society (IETS) Data Retrieval Committee presents the 24th annual report on the data collected globally during 2015 for embryo transfer (ET) activity in 2014. There are three major features this year, two good and one not so good. The good news is that the European ET data are now separated into dairy and beef, thus providing a more accurate assessment of the use of ET in these two major cattle industries globally. Also the European data includes export data. The not so good news is that there is no ET data for Asia. This was largely due to circumstances beyond the capabilities of the regional data collectors there.

1.1 DATA COLLECTION

The quality of the data continued to vary greatly between regions and countries. Only 39 of 225 (17.33%) countries submitted data to the IETS secure web-based database, a drop from 40 that reported the previous year. Countries that submitted data previously that did not submit data include Japan, Israel, South Korea, and Kazakhstan in Asia, Chile in South America, Moldova, Ukraine, and the United Kingdom. Countries that submitted data this year but not last year were Austria, Croatia, Latvia, Lithuania, Norway, and Slovenia.

Table 1 Number and proportion of countries submitting data

Region	No. countries in region	No. countries submitting	% countries in region	No. countries submitting data	% countries in region submitting data
		2013		2014	
Africa	57	2	3.51%	3	5.26%
Asia	53	4	7.55%	0	0.00%
Europe	45	24	53.33%	27	60.00%
North America	3	3	100.00%	3	100.00%
Oceania	23	2	8.70%	2	8.70%
South America	44	5	11.36%	4	9.09%
Globally	**225**	**40**	**17.78%**	**39**	**17.33%**

The South African data collector advised by email of searching for data in parts of Africa and reported that as far as he could discern, there was no ET activity in Botswana, Zimbabwe, Mozambique, Zambia, Malawi, Uganda, and Rwanda.

Discussions with North American data collectors indicated that in Canada, 95% of ET activity is reported, but in the United States, based on drug usage, only around 60–70% is reported. In Australia, ET activity is grossly under-reported with only a minority of ET practitioners reporting.

1.2 BOVINE ANIMALS

The bovine ET industry recorded a significant drop in in vivo-derived (IVD) ET activity from previous year, but this was due to lack of Asian data, a significant player in the ET industry. If the 2013 Asian data was removed, 623,997 IVD embryos were collected in the rest of the world that year, not much different from the reported 614,464 IVD embryos collected in 2014. Similarly, 485,595 IVD embryos were transferred in the rest of the world, again not much different from 464,582 transferred in 2014.

North America counted for 66% of reported IVD embryos collected and 58% transferred. This was followed by Europe (22% collected and 26% transferred) and South America (11% collected and 13%

transferred). In 2013, Asia had accounted for 14% of global IVD embryo collected and 16% transferred.

Tables 2 and 3 summarise the global activity for **IN VIVO-DERIVED** (IVD) embryo collection and transfer according to the data submitted for 2014 as compared with 2013.

Table 2 Collection of bovine IVD embryos by region

REGION	IN-VIVO DERIVED EMBRYO COLLECTION							
	Collections	Transferrable embryos	No. embryos per collection	% of global embryo production	Collections	Transferrable embryos	No. embryos per collection	% of global embryo production
	2013				2014			
Africa	1081	8461	7.83	1.16%	794	5782	7.28	0.94%
Asia	9391	105249	11.21	14.43%	0	0	-	0.00%
Europe	22316	135711	6.08	18.61%	22408	137998	6.16	22.46%
North America	57735	392530	6.80	53.83%	58934	397306	6.74	64.66%
Oceania	2837	14525	5.12	1.99%	1326	5224	3.94	0.85%
South America	12545	72770	5.80	9.98%	11204	68154	6.08	11.09%
Grand Total	**105905**	**729246**	**6.89**	**100.00%**	**94666**	**614464**	**6.49**	**100.00%**

Table 3 Transfer of bovine IVD embryos by region

REGION	IN-VIVO DERIVED EMBRYO TRANSFERS							
	No. fresh embryos	No. frozen embryos	Total Transferred	% of global transfers	No. fresh embryos	No. frozen embryos	Total Transferred	% of global transfers
	2013				2014			
Africa	4098	2754	6852	1.15%	4455	944	5399	1.16%
Asia	27346	62844	90190	15.71%	0	0	0	0.00%
Europe	46206	73662	119868	20.89%	59546	63434	122980	26.47%
North America	115832	161785	277617	48.31%	107700	163646	271346	58.41%
Oceania	5488	8570	14058	2.23%	2391	2180	4571	0.98%
South America	32666	34534	67200	11.71%	27868	32418	60286	12.98%
Grand Total	**231636**	**344149**	**575785**	**100.00%**	**201960**	**262622**	**464582**	**100.00%**

With regards to bovine in vitro produced (IVP) ET activity, number of embryos derived from oocytes collected by ovum pick-up (OPU) grew 14% from 517,587 in 2013 to 590,0359 in 2014. However, this was not reflected with number transferred. This dropped by 7% from 393,625 to 364,727 embryos. While IVP ET activity is fairly significant in Asia, IVP embryos are more commonly from abattoir-derived oocytes rather than OPU (4,171 collected by OPU versus 25,896 collected by abattoir-derived oocytes in 2013). The impact of this is clearly seen in Table 5.

Compared with 2013 data, South America recorded a significant drop in both IVP OPU embryo collection (5.5%) and transfers (21%). This was largely due to severe drought conditions in major beef areas and falling beef prices. On the other hand, North America experienced very significant growth due to improved beef market conditions with increased IVP OPU embryo collection (84%) and transfers (40%). Europe also experienced increased IVP OPU embryo collection (14%) and transfers (16%).

With regards to abattoir-derived IVP embryos, in 2013, Asia had accounted for 89% of all collections and 85% of all transfers. So the impact of lack of Asian data for 2014 is very significant. Interestingly, this form of ET activity decreased most significantly in North America, with collection of transferrable embryos decreasing by 91% and transfers by 92%.

Tables 4 and 5 summarises the global activity for **IN VITRO PRODUCED** (IVP) embryo collection and transfer according to the data submitted.

Table 4 Collection and transfer of OPU bovine IVP embryos by region

Region	OVUM PICK UP									
	Collection			Transfers		Collection			Transfers	
	Donors	Oocytes	Embryos	Fresh embryo	Frozen embryo	Donors	Oocytes	Embryos	Fresh embryo	Frozen embryo
	2013					2014				
Africa	1384	20097	5012	3048	1552	1359	20976	5081	1202	170
Asia	1827	30441	4171	0	0	0	0	0	0	0
Europe	7506	60315	13722	9236	2804	9710	83785	15693	10980	2957
North America	24707	444312	112300	53836	12766	43452	812468	206139	71263	21667
Oceania	2730	27114	5923	2417	3038	3250	30549	6486	2044	3171
South America	47684	949330	376459	289903	15025	71327	861100	356960	211177	40096
Grand Total	**85838**	**1531609**	**517587**	**358440**	**35185**	**129098**	**1808878**	**590359**	**296666**	**68061**

Table 5 Transfer of abattoir-derived bovine IVP embryos by region

Region	ABATTOIR DERIVED									
	Collection			Transfers		Collection			Transfers	
	Donors	Oocytes	Embryos	Fresh embryo	Frozen embryo	Donors	Oocytes	Embryos	Fresh embryo	Frozen embryo
	2013					2014				
Africa	0	0	0	53	10	0	0	0	0	0
Asia	1832	751749	25896	8571	6422	0	0	0	0	0
Europe	1449	19881	1050	45	29	1335	37414	1369	0	35
North America	355	7403	2093	2076	355	0	258	187	193	0
Oceania	2	52	2	9	3	9	146	16	260	0
South America	0	0	0	0	0	118	2025	519	410	0
Global	**3638**	**779085**	**29041**	**10754**	**6819**	**1462**	**39843**	**2091**	**863**	**35**

1.3 OTHER LIVESTOCK SPECIES

Buffalo – no IVD or IVP activity reported this year.

Sheep – nine countries reported on sheep embryo collection and transfers, with South Africa and Australia being the major producers. Other countries reporting were Mexico, New Zealand, the United States, Canada, Turkey and Argentina. Globally 14,161 IVD embryos were collected and 10,339 transferred in 2014.

Goats – four countries (South Africa, New Zealand, Canada and the United States) reported with 220 embryos collected and 1613 transferred in 2014.

Deer – Canada was the only country reporting cervine ET activity with 1 embryos collected and 0 transferred

Horses – More countries reported equine ET activities – Canada, South Africa, France, Poland, Switzerland, the United States, Argentina and Mexico. Brazil, a major producer, did not report.

1.4 GENERAL COMMENTS

A major feature is the improved ET data for exports of bovine IVD embryos from Europe. As shown in Table 6, 17 of 38 countries provided ET export activity data in 2014, a vast improvement over the seven countries that reported data in 2013. Of the 32,285 bovine IVD embryos exported, 21,467 (66%) were embryos collected from dairy cattle, the rest from beef cattle.

The collection, handling, processing and transfer of livestock embryos has continued to prove to be very safe with negligible risk of disease transmission, even with fresh embryos, often washed only up to three times and collected from animals of unknown health status before transfer to other animals within the same country.

Table 6 Countries known to export embryos

ANIMAL SPP	COUNTRY	EXPORTED
Bovine IVD	Argentina	2827
	Australia	32
	Belgium	90
	Canada	10920
	Denmark	61
	Finland	8
	France	562
	Hungary	15
	Luxembourg	50
	Netherlands	1040
	South Africa	926
	Spain	66
	Switzerland	151
	United States	15537
	TOTAL	**32285**
Bovine IVP OPU	Canada	821
	Panama	60
	Russian Federat	100
	TOTAL	**981**

ANIMAL SPP	COUNTRY	EXPORTED
Sheep IVD	Australia	414
	Canada	200
	New Zealand	79
	TOTAL	693
Goat IVD	New Zealand	3
	United States	199
	TOTAL	202
Swine IVD	France	112
	TOTAL	112

2 INTRODUCTION

This is the 24th annual report of the IETS Data Retrieval Committee, the highlight of which is the presentation of the 2014 global data on activities related to in vivo and in vitro embryo collection and transfer in domestic farm animals. The data is collected by national data collectors who volunteer to collect the information from the embryo transfer (ET) practitioners within their country, either directly from these practitioners or indirectly via the national ET association.

The year began with the Data Retrieval Committee meeting in Versailles, France, on 12th January 2015 to review the previous annual ET activity report, comment on using the new IETS Database for collecting and storing numbers of in vivo and in vitro domestic farm animal embryo collections and transfers globally and the availability of national ET data collectors.

3 METHODOLOGY

The methodology is as reported for the previous report "2013 Statistics of Embryo Collection and Transfer in Domestic Farm Animals," available online at:

http://www.iets.org/pdf/comm_data/December2014.pdf.

The data collectors are those as listed on the next page.

The major difference this year is the European data is much improved in format, a remarkable achievement given that it was a new data collector, with generous assistance from the previous collector, involved and the variety of languages spoken in Europe.

The Data Retrieval Committee is extremely grateful for all the data submitted and appreciates the efforts of those who made considerable effort to improve the quality of data submitted.

Table 7 List of Data Collectors by Region and Country

REGION/COUNTRY	Collector	REGION/COUNTRY	Collector
AFRICA		**EUROPE**	
Kenya	Morne de la Rey	**AETE**	Marja Mikkola
Namibia	Morne de la Rey		
Rep South Africa	Morne de la Rey	Austria	Gabi Wetchy
ASIA		Belgium	Peter Vercauteren
India	Aditya Misra	Bosnia & Herzegovina	Teodor Markovic
Israel	Amir Shiffman	Croatia	Mario Matkovic
Japan	Takashi Nagai	Czech Republic	Pavel Bucek
Kazakstan	Victor Madison	Denmark	Henrik Callesen
Korea	Sang Rae Cho	Estonia	Jevgeni Kurykin
Taiwan	Tzong-faa Shiao	Finland	Marja Mikkola
Thailand	Rangsun Parnpai	France	Clair Ponsart
NORTH AMERICA		Germany	Hubert Cramer
Canada	Reuben Mapletoft	Greece	Samartzi Foteini
Mexico	Salvador Romo	Hungary	F Flink
United States	Michael Wehrman	Ireland	Pat Lonergan
SOUTH AMERICA		Italy	Giovanna Lazzari
Argentina (bovine)	Gabriel Bo	Luxembourg	J Westphal
Argentina (equine)	Luis Losinno	Netherlands	Jan Derksen
Brazil (equine)	M Alvarenga	Norway	Eiliv Kummen
Brazil (bovine)	Joao Henrique Moreira Viana	Poland	Jedrzej Jaskowski
Chile	Marcelo del Campo	Portugal	Joao Nestor das Chagas e Silva
Dominican Rep	Luis Nasser	Russia	Victor Madison
Ecuador	Michael Wehrman	Spain	Julio de la Fuente
Panama	Luis Nasser	Sweden	A Tidstrom
Peru	Edwin Mellisho	Switzerland	Rainer Saner
Uruguay	Pedro Bañales	Turkey	Ebru Emsen
St Martinique	Michael Wehrman	United Kingdom	Ian Kippax
OCEANIA		Ukraine	Victor Madison
Australia	Rob Pashen; George Perry		
New Zealand	Grant Clarke		

4. RESULTS

4.1 IN VIVO-DERIVED BOVINE EMBRYOS

Bovine IVD embryos collected

Table 8 shows that more bovine IVD embryos are being transferred fresh than frozen in Africa, Europe, and the Oceania but not in the Americas.

Table 8 Frozen IVD embryos transferred as % of all IVD embryos transferred

REGION	IN-VIVO DERIVED EMBRYO TRANSFERS							
	No. fresh embryos	No. frozen embryos	Total Transferred	% frozen	No. fresh embryos	No. frozen embryos	Total Transferred	% frozen
	2013				2014			
Africa	4098	2754	6852	40.19%	4455	944	5399	17.48%
Asia	27346	62844	90190	69.68%	0	0	0	-
Europe	46206	73662	119868	61.45%	59546	63434	122980	51.58%
North America	115832	161785	277617	58.28%	107700	163646	271346	60.31%
Oceania	5488	8570	14058	60.96%	2391	2180	4571	47.69%
South America	32666	34534	67200	51.39%	27868	32418	60286	53.77%
Grand Total	**231636**	**344149**	**575785**	**59.77%**	**201960**	**262622**	**464582**	**56.53%**

Tables 9 and 10 show the number of bovine IVD embryos collected and transferred by region and country. There were more transfers of beef cattle IVD embryos in all regions except Europe where dairy cattle IVD ET predominated, particularly in France, Germany, and The Netherlands.

Table 9 Bovine IVD embryo collection by region and country

Region / Country	IN-VIVO DERIVED EMBRYO COLLECTION					
	COLLECTIONS (FLUSHES)			TRANSFERRABLE EMBRYOS COLLECTED		
	Dairy	Beef	TOTAL	Dairy	Beef	TOTAL
Africa						
Kenya	57	0	57	160	0	160
Namibia	0	3	3	0	10	10
South Africa	36	698	734	180	5432	5612
TOTAL	**93**	**701**	**794**	**340**	**5442**	**5782**
Europe						
Austria	30	182	212	206	1372	1578
Belgium	186	878	1064	935	4203	5138
Bosnia and Herzegovina	0	0	0	0	0	0
Croatia (Hrvatska)	0	0	0	0	0	0
Czech Republic	0	4	4	0	28	28
Denmark	587	55	642	4008	420	4428
Estonia	0	0	0	0	0	0
Finland	458	1	459	3589	28	3617
France	5636	1223	6859	30597	7214	37811
Germany	2292	612	2904	12563	5314	17877
Greece	0	0	0	0	0	0
Hungary	13	63	76	110	565	675
Ireland	610	0	610	3721	0	3721
Italy	2167	51	2218	17379	347	17726
Latvia	0	0	0	0	0	0
Lithuania	72	13	85	396	51	447
Luxembourg	184	5	189	1267	15	1282
Netherlands	5220	0	5220	32556	0	32556
Norway	10	0	10	0	0	0
Poland	167	0	167	1098	0	1098
Portugal	69	2	71	486	8	494
Russian Federation	400	77	477	2247	499	2746
Slovenia	5	0	5	10	0	10
Spain	485	90	575	2497	505	3002
Sweden	92	8	100	375	20	395
Switzerland	434	27	461	3166	203	3369
Turkey	0	0	0	0	0	0
TOTAL	**19117**	**3291**	**22408**	**117206**	**20792**	**137998**
North America						
Canada	8624	2353	10977	62667	17076	79743
Mexico	0	1407	1407	0	4768	4768
United States	15217	31333	46550	93460	219335	312795
TOTAL	**23841**	**35093**	**58934**	**156127**	**241179**	**397306**
Oceania						
Australia	206	968	1174	800	4085	4885
New Zealand	140	12	152	272	67	339
TOTAL	**346**	**980**	**1326**	**1072**	**4152**	**5224**
South America						
Argentina	598	4182	4780	2767	22050	24817
Brazil	3482	2942	6424	25681	17656	43337
Dominican Republic	0	0	0	0	0	0
Panama	0	0	0	0	0	0
TOTAL	4080	7124	11204	28448	39706	68154
GRAND TOTAL	**47477**	**47189**	**94666**	**303193**	**311271**	**614464**

Table 10 Bovine IVD embryo transfer by region and country

Region / Country	IN-VIVO DERIVED EMBRYO TRANSFERS											
	No. Fresh Embryos			No. Frozen Domestic Embryos			No. Frozen Imported Embryo			No. Embryos Exported		
	Dairy	Beef	TOTAL	Dairy	Beef	TOTAL	Dairy	Beef	TOTAL	Dairy	Beef	TOTAL
Africa												
Kenya	92	0	92	70	0	70	0	0	0	0	0	0
Namibia	0	7	7	0	0	0	0	0	0	0	0	0
South Africa	143	4213	4356	135	739	874	0	440	440	0	926	926
TOTAL	**235**	**4220**	**4455**	**205**	**739**	**944**	**0**	**440**	**440**	**0**	**926**	**926**
Europe												
Austria	450	0	450	1003	0	1003	3	0	3	0	0	0
Belgium	1203	0	1203	4368	0	4368	1180	0	1180	90	0	90
Bosnia and Herzegovi	0	0	0	0	0	0	0	0	0	0	0	0
Croatia (Hrvatska)	0	0	0	0	0	0	0	0	0	0	0	0
Czech Republic	0	27	27	0	0	0	0	0	0	0	0	0
Denmark	2443	0	2443	1269	0	1269	0	0	0	61	0	61
Estonia	0	0	0	7	0	7	24	0	24	0	0	0
Finland	942	0	942	1720	0	1720	621	0	621	8	0	8
France	18657	0	18657	17249	0	17249	1051	0	1051	562	0	562
Germany	19132	0	19132	0	0	0	0	0	0	0	0	0
Greece	0	0	0	0	0	0	0	0	0	0	0	0
Hungary	220	0	220	315	0	315	101	0	101	15	0	15
Ireland	834	0	834	947	0	947	0	0	0	0	0	0
Italy	6115	0	6115	0	0	0	0	0	0	0	0	0
Latvia	0	0	0	0	0	0	0	0	0	0	0	0
Lithuania	66	0	66	42	0	42	0	0	0	0	0	0
Luxembourg	450	0	450	950	0	950	0	0	0	50	0	50
Netherlands	5888	0	5888	26522	0	26522	0	0	0	1040	0	1040
Norway	0	0	0	0	0	0	200	0	200	0	0	0
Poland	600	0	600	300	0	300	0	0	0	0	0	0
Portugal	56	0	56	32	0	32	31	0	31	0	0	0
Russian Federation	878	0	878	565	0	565	464	0	464	0	0	0
Slovenia	8	0	8	1	0	1	1	0	1	0	0	0
Spain	693	0	693	1428	0	1428	141	0	141	66	0	66
Sweden	164	0	164	231	0	231	514	0	514	0	0	0
Switzerland	720	0	720	1678	0	1678	476	0	476	151	0	151
Turkey	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**59519**	**27**	**59546**	**58627**	**0**	**58627**	**4807**	**0**	**4807**	**2043**	**0**	**2043**
North America												
Canada	20393	2425	22818	22704	5476	28180	75	197	272	7457	3463	10920
Mexico	0	1826	1826	0	1454	1454	154	100	254	0	0	0
United States	38097	44959	83056	29938	103845	133783	0	0	0	11899	3638	15537
TOTAL	**58490**	**49210**	**107700**	**52642**	**110775**	**163417**	**229**	**297**	**526**	**19356**	**7101**	**26457**
Oceania												
Australia	420	1867	2287	203	1716	1919	26	325	351	0	32	32
New Zealand	104	0	104	168	67	235	0	0	0	0	0	0
TOTAL	**524**	**1867**	**2391**	**371**	**1783**	**2154**	**26**	**325**	**351**	**0**	**32**	**32**
South America												
Argentina	760	6792	7552	1645	9668	11313	325	470	795	68	2759	2827
Brazil	11402	8914	20316	14021	6759	20780	0	0	0	0	0	0
Dominican Republic	0	0	0	0	0	0	0	0	0	0	0	0
Panama	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**12162**	**15706**	**27868**	**15666**	**16427**	**32093**	**325**	**470**	**795**	**68**	**2759**	**2827**
Grand Total	**130930**	**71030**	**201960**	**127511**	**129724**	**257235**	**5387**	**1532**	**6919**	**21467**	**10818**	**32285**

4.2 IN VITRO-FERTILISED BOVINE EMBRYOS

IVP bovine embryo production

IVP bovine embryo production continued to expand rapidly, surging past the 500,000 barrier set the previous year, then surging again, passing the 600,000 barrier this year with 630,202 transferrable embryos produced, 590,359 by OPU and 39,843 by abattoir-derived oocytes in 2014. Given that in 2013, globally 546,628 IVP embryo were produced and that Asia had reported 30,067 IVP that year but did not report this year, this is a very significant increase. Most of the increase was in the United States, where OPU IVP embryos grew 91% from 101,502 to 193,699.

Table 11 Bovine IVP embryo transfer by region and country

REGION / COUNTRY	OVUM PICK UP							ABATTOIR DERIVED				
	Collection			Transfers			Exports	Collection			Transfers	
	Donors	Oocytes	Embryos	Fresh embryo	Frozen domestic	Frozen foreign		Donors	Oocytes	Embryos	Fresh embryos	Frozen domestic
Africa												
South Africa	1359	20976	5081	1202	170	0	0	0	0	0	0	0
TOTAL	**1359**	**20976**	**5081**	**1202**	**170**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Europe												
Czech Republic	0	0	0	0	0	0	0	35	526	223	0	5
France	159	1300	610	196	194	0	0	1	5	1	0	0
Germany	1907	3632	2853	2765	0	0	0	28	2480	183	0	0
Italy	654	10310	1518	384	1074	0	0	21	780	111	0	0
Lithuania	0	0	0	0	0	0	0	3	11	0	0	0
Netherlands	5060	43825	5815	4885	628	0	0	106	21103	266	0	0
Portugal	15	132	1	10	34	0	0	1141	12389	557	0	0
Russian Federation	1019	11408	2998	1781	483	0	100	0	0	0	0	0
Spain	896	13178	1898	959	479	10	0	0	0	0	0	0
Switzerland	0	0	0	0	0	55	0	0	120	28	0	0
TOTAL	**9710**	**83785**	**15693**	**10980**	**2892**	**65**		**1335**	**37414**	**1369**	**0**	**35**
North America												
Canada	2320	25090	7345	2310	1387	0	821	0	75	25	6	0
Mexico	1428	24619	5095	4859	0	0	0	0	183	30	55	0
United States	39704	762759	193699	64094	20280	0	0	0	0	132	132	0
TOTAL	43452	812468	206139	71263	21667	0		0	258	187	193	0
Oceania												
Australia	0	0	0	0	0	0	0	0	0	0	244	0
New Zealand	3250	30549	6486	2044	3171	0	0	9	146	16	16	0
TOTAL	3250	30549	6486	2044	3171	0		9	146	16	260	0
South America												
Argentina	1336	15954	3973	3097	319	0	0	118	2025	519	410	0
Brazil	69140	829685	348468	205166	39629	0	0	0	0	0	0	0
Dominican Republic	309	5707	1811	1152	0	0	0	0	0	0	0	0
Panama	542	9754	2708	1762	148	0	60	0	0	0	0	0
TOTAL	71327	861100	356960	211177	40096	0	60	118	2025	519	410	0
GRAND TOTAL	**129098**	**1808878**	**590359**	**296666**	**67996**	**65**	**981**	**1462**	**39843**	**2091**	**863**	**35**

Bovine IVP embryo production dropped in Brazil. The data collector for Brazil advised that for the first time since 2006, there was a decrease in figures (-6.0% in total embryo production and -18% in embryo transfers when compared with 2013). This reflects the huge drought over the nation between 2013-2014, the economic recession and political uncertainty. He further advised that the main trends did not change: the continuing decrease in IVD embryos, increase in IVP embryos (including in *B. taurus*) and increase in embryo production in dairy breeds. Most interesting is the decline in proportion of embryos transferred fresh, particularly in the Americas and the Oceania (Table 12).

Table 12 Fresh bovine IVP embryos transferred as % of all IVP embryos transferred

Region	% IVP Embryo transferred fresh	
	2013	2014
Africa	66.5%	87.6%
Asia	57.2%	-
Europe	76.6%	78.8%
North America	81.0%	76.7%
Oceania	44.4%	39.2%
South America	95.1%	84.0%
GRAND TOTAL	**89.8%**	**81.3%**

Table 13 Other livestock species – embryo collection, transfer, and exports by country

Country	COLLECTION		TRANSFERS			
	Collection	Embryos	Fresh embryos	Frozen domestic	Frozen foreign	Exports
SHEEP IN-VIVO DERIVED EMBRYOS						
Argentina	30	145	145	0	170	0
Australia	435	4031	3102	515	0	414
Canada	17	144	0	0	0	200
Mexico	51	188	16	20	0	0
New Zealand	14	82	0	0	0	79
South Africa	1332	9132	4950	1000	0	0
Turkey	11	90	40	50	0	0
United States	88	349	305	26	0	0
Grand Total	**1978**	**14161**	**8558**	**1611**	**170**	**693**
SHEEP IN-VITRO PRODUCED EMBRYOS						
New Zealand	85	113	76	37	0	0
Portugal	0	187	0	0	0	0
Grand Total	**85**	**300**	**76**	**37**	**0**	**0**
GOAT IN-VIVO DERIVED EMBRYOS						
Canada	4	37	0	0	0	0
France	0	0	0	8	0	0
New Zealand	2	3	0	0	0	3
South Africa	154	1431	1080	0	0	0
United States	100	749	478	47	0	199
Grand Total	**260**	**2220**	**1558**	**55**	**0**	**202**
GOAT IN-VITRO PRODUCED EMBRYOS						
New Zealand	14	0	0	0	0	0
Grand Total	**14**	**0**	**0**	**0**	**0**	**0**
CERVID IN-VIVO DERIVED EMBRYO						
Canada	1	0	0	0	0	0
Grand Total	1	0	0	0	0	0
HORSES IN-VIVO DERIVED EMBRYOS						
Argentina	1433	1101	1101	0	0	0
Canada	36	26	25	1	0	0
France	606	365	365	0	0	0
Mexico	10	10	6	4	0	0
Poland	18	15	11	0	0	0
Portugal	0	2	0	0	0	0
South Africa	4	2	0	0	0	0
Switzerland	30	0	0	0	0	0
United States	85	54	51	3	0	0
Grand Total	**2222**	**1575**	**1559**	**8**	**0**	**0**
HORSES IN-VITRO DERIVED EMBRYOS						
Italy	195	141	8	75	0	0
Grand Total	**195**	**141**	**8**	**75**	**0**	**0**
SWINE IN-VIVO DERIVED EMBRYOS						
France	7	112	0	0	0	112
Switzerland	0	12	112	0	0	0
Grand Total	**7**	**124**	**112**	**0**	**0**	**112**

4.3 OTHER LIVESTOCK SPECIES

Table 13 details the ET activity for both IVD and IVP embryos in species other than cattle.

Buffalo – no IVD or IVP embryo production or transfers reported this year.

Sheep – Only eight countries reported this year, down from 10 in 2013, due to no data from Chile and no activity in Turkey. South Africa (2,958 IVD embryos in 2013 and 9,132 in 2014) and Australia (2,732 IVD embryos in 2013 and 4,031 in 2014) reported increased production. Both New Zealand and Portugal reported IVP embryos produced and transferred for the first time.

Goats – Six countries reported ET activity in 2014, up from four in 2013. The biggest increase was in South Africa (116 IVD embryos in 2013 and 1431 in 2014).

Cervids – only one collection attempted.

Horses – ET activity was down from 20,172 IVD embryos collected in 2013 to 1,575 in 2014. This was most likely due to under-reporting. No data was received from Brazil. Once again, Italy was the only country reporting IVP ET activity, which almost doubled from 74 embryos in 2013 to 141 embryos in 2014.

Swine – Interestingly, there was no ET activity reported in Canada, which had reported 118 IVD embryos collected in 2013.

5. DISCUSSION AND CONCLUSION

In conclusion, the year 2014 resulted in another successful outcome of embryo transfer activity world-wide. With regards to data collection, it is essential that the IETS Data Collection committee continue to:

- encourage countries to report their ET data by appointing national data collectors acceptable to colleagues
- encourage ET practitioners, including small teams, to provide their ET data accurately and in the current IETS format now that a secure web-based database is available.

The improved reporting by the European ET practitioners according to the IETS format, that is, in regards to separating beef cattle data from dairy cattle, and reporting export data, will over time allow more accurate analyses and assessments of ET activities.

At the moment, there appears to be very little international trade in bovine IVP embryos, due mainly to lack of clear guidelines for managing the disease risks, reflecting the little research conducted in this area. Industry demands are forcing several countries to address this issue and the IETS is providing leadership in this area, updating its Manual and, through its Health and Safety Advisory Committee, advising the World Animal Health Organisation (OIE) on updates to the Terrestrial Animal Health Code

6. ACKNOWLEDGMENTS

While the written part of the report is much briefer than previous years, the formatting of some tables were improved to allow the data to better speak for themselves. The format of other more complex tables remained the same to allow direct comparison with the previous year's tables. Comments from the national data collectors were more actively solicited for inclusion in this report.

Those wishing to use tables for their reports can contact the author for a copy of the Excel spreadsheet used in the tabulation and analyses of ET data.

It is the Chairperson's privilege to gratefully acknowledge the valuable efforts of all the national data collectors who participated in the data retrieval process. I also gratefully acknowledge all the ET practitioners who provided with the data either to their national data collectors or directly to the database.