



IRISH CATTLE BREEDING FEDERATION

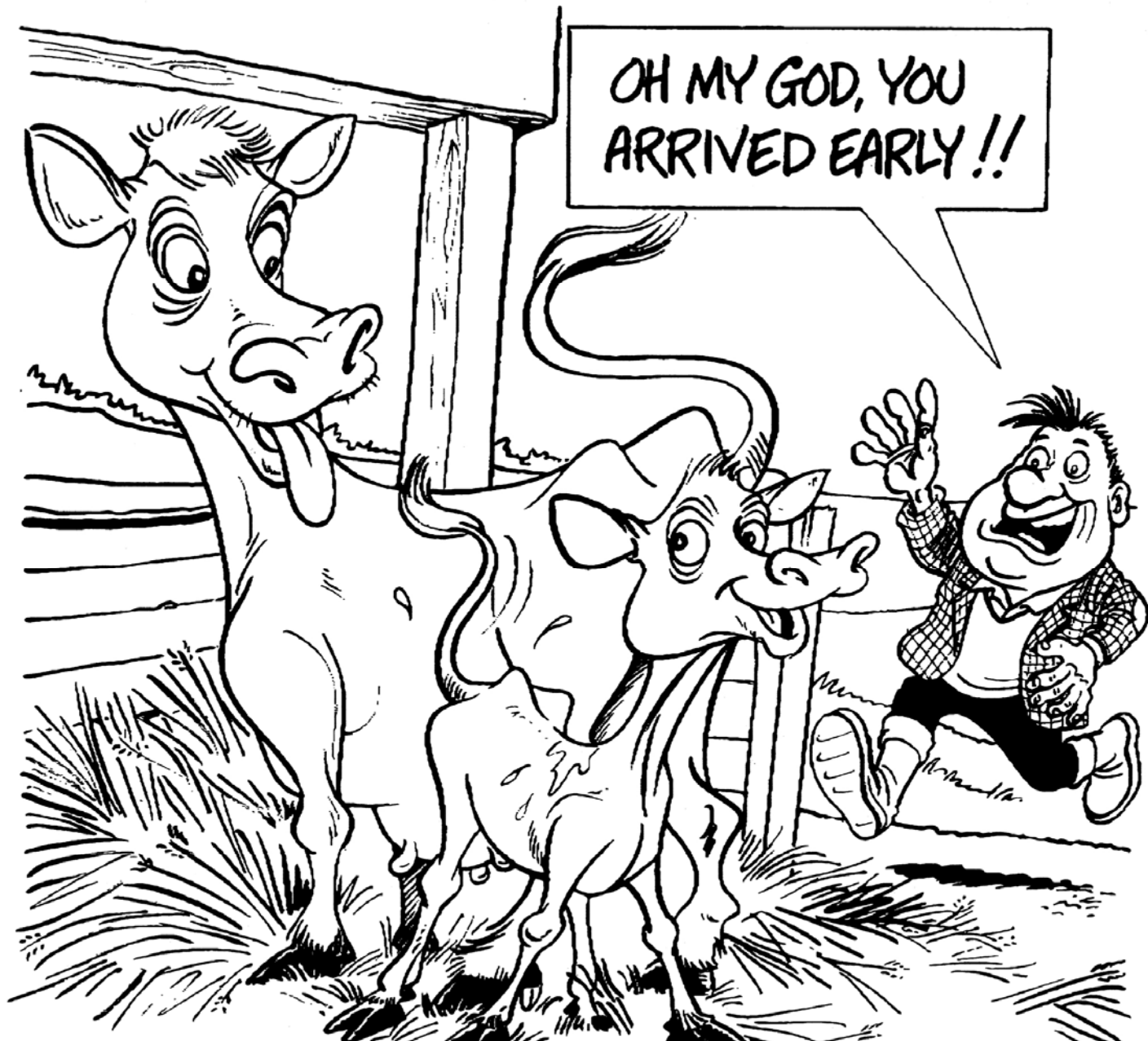
***USE OF INSEMINATION DATA IN
CATTLE BREEDING; SOME
EXPERIENCES FROM IRELAND.***

***A. Cromie, F. Kearney, R Evans, D Berry, D
Wilhelmus.***

ICAR/Interbull Meeting.

36th ICAR Session, Niagara Falls, United States

16-20th June.



Use insemination data to try and avoid this!

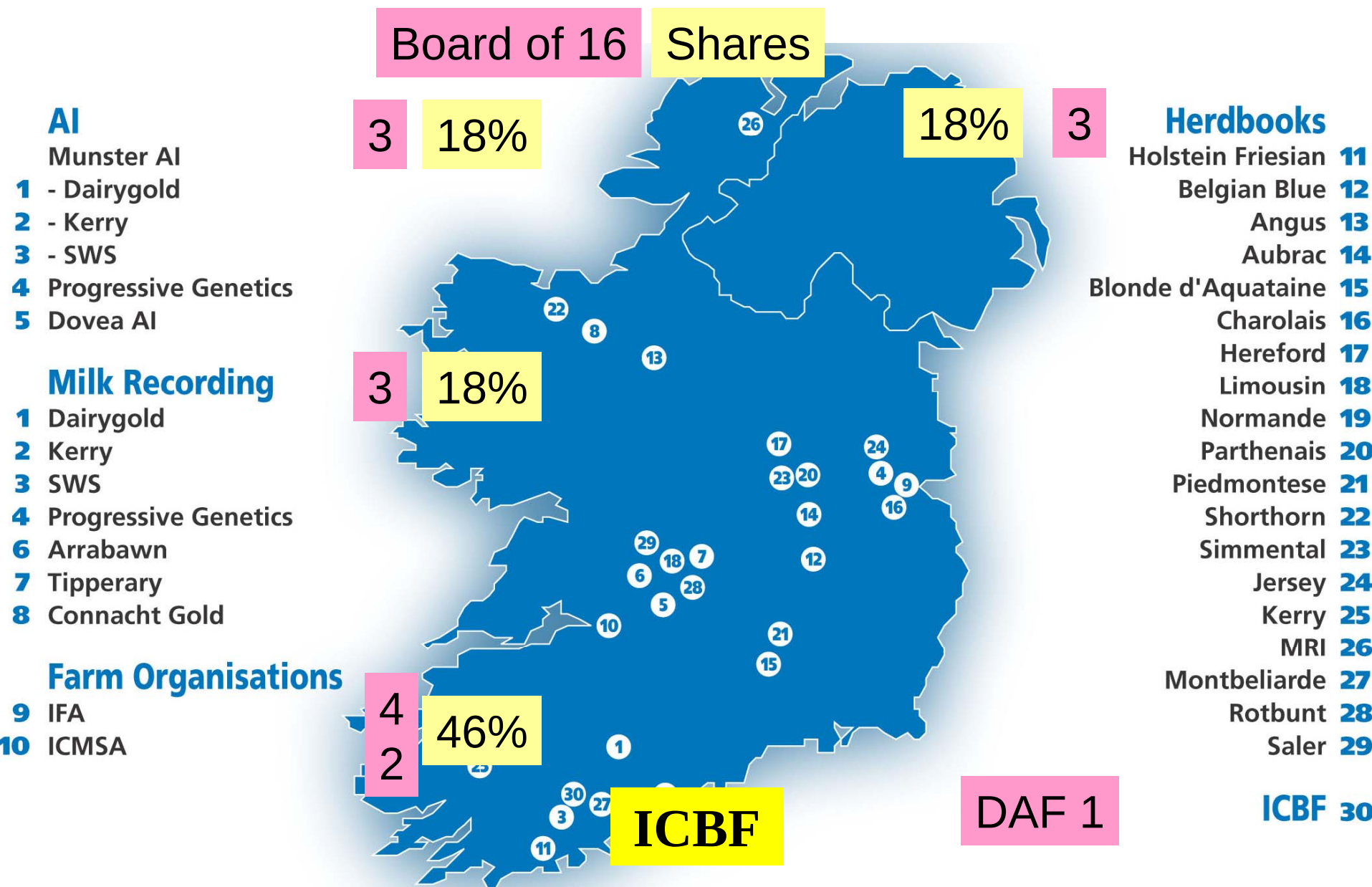
Overview

- Background – Irish Cattle Breeding.
- Use of Insemination data;
 - 1. Collection of insemination data.**
 - 2. Use of insemination data in ICBF genetic evaluations.**
 - 3. Use of insemination data as a support tool in decision making.**
- Comments/discussion.

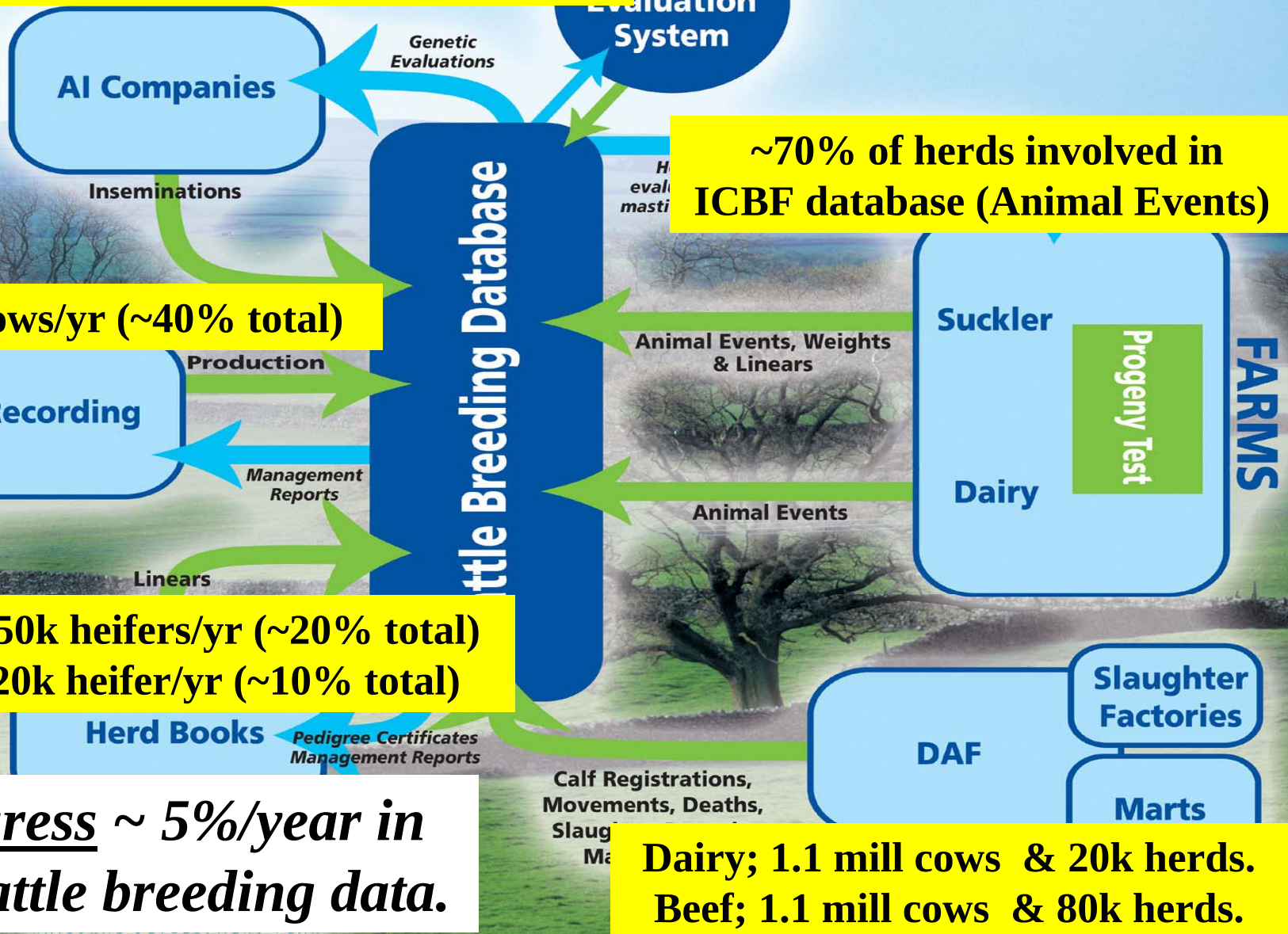
ICBF - Background

- Formally established in 2000
- 4 key functions;
 1. Leadership/direction.
 2. Central Database (*Animal Events*)
 3. Genetic Evaluations (*e.g., EBI*)
 4. Breeding scheme (*GENE IRELAND*).

MEMBERS AND BOARD OF ICBF



Dairy; 120k AI replace/yr (~45% total).
Beef; 30k AI replace/yr (~15% total)



Use of Insemination Data

1. Collection of insemination data.
2. Use of insemination data in ICBF genetic evaluations.
3. Use of insemination data as a support tool in decision making.

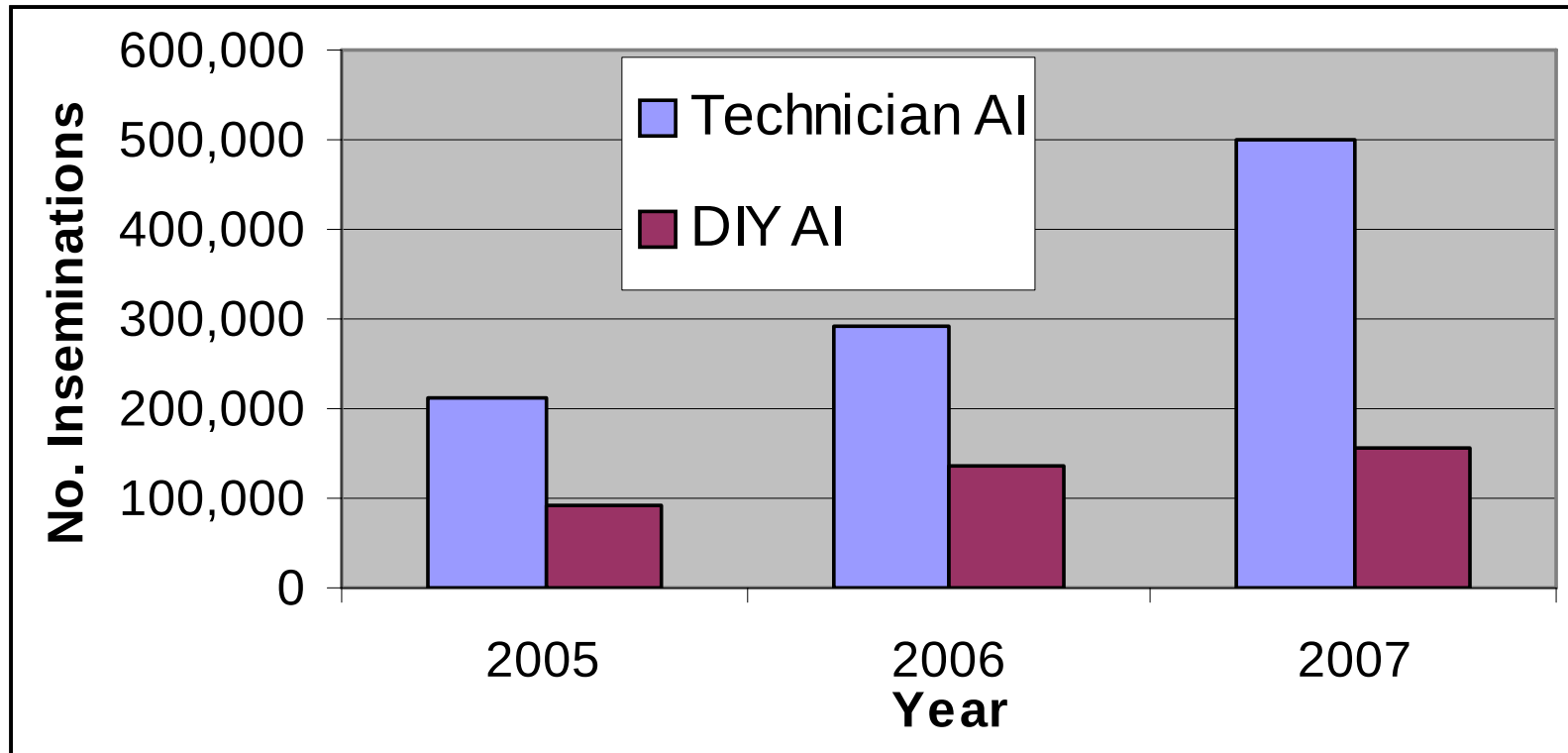
1. Collection of Insemination Data



1. Collection of Insemination Data

- i. Trends in recording
- ii. Technician recording of AI data
- iii. Farmer recording of AI data
- iv. Future plans

i. Trends in Recording



- >100% increase in AI recording.
- ~40% of total AI events in 2007 (& 70% in 2008)

ii. Technician Recording

- AI handheld technology
 - Itronix handheld
 - Linked to database (GPRS).
 - All cows on hand-held.
 - Docket printed on-farm.
 - 240 now in operation (90%)
- Major benefits.
 - Inbreeding & lethal gene check.
 - Farmer support;
 - Sire Advice.
 - Fertility management
 - AI Company support;
 - No dockets!
 - Fertility management.
 - Invoicing & stock control



iii. Farmer recording of AI data

- 157k - 63% Farm PC, 9% sheets & 28% via ICBF website
- Web-based recording - New for 2007
 - Breeding charts for on-farm recording (during season)
 - Web-based recording (end of season).
 - Farmers can also record “as events happen”.
- Link to Fertility management reports.

ICBF Breeding Chart



Dairy Herd Breeding Chart

Herd Owner PAT CRONIN

NID IE1417638

Year 2008



Cow Details											Proposed Bulls			Service Information									
Cow Tag	Cow FB	Cow EBI (E)	Milk (E)	Fert (E)	Cow's Sire	Mat Grand Sire	Lact No.	Date Calved	Calv Ease	T/A	Bull 1	Bull 2	Bull 3	PreServe Heat	First		Second		Third		Fourth		Preg Test Result
														Date	Date	Bull	Date	Bull	Date	Bull	Date	Bull	
IEFFT0054R	54	120	47	56	MAU		9	26-MAR-08	1		BWZ	RDU	GIO										
IEFFT0055P	55	94	20	59	LEW	OMR	9	16-MAR-08	1		BWZ	CZO	CBH										
IEFFT0068E	68	121	43	64	MAU	RSG	8				BWZ	RDU	GIO										
IEFFT0090M	90	93	59	19	JOS	KEM	9	01-MAR-08	2		WUZ	BWZ	CBH										
IE141763820127	127	138	45	76	LEW	WYT	7				BWZ	CZO	RDU										
IE141763880157	157	116	53	44	LEW	ARN	6				BWZ	CBH	WUZ										
IE141763860188	188	107	16	76	MAU	RSG	7	19-FEB-08	2		CZO	RDU	BWZ										
IE141763810217	217	84	13	71	AHD	ARN	5	12-FEB-08	1		CZO	RDU	GIO										
IE14176383021	219	80	37	51	AHD	ARN	6	05-FEB-08	1		RDU	CZO	GIO										

**Animal ID,
Ancestry & EBI,
calving data**

**Suggested
Matings**

**Record
Serves.**

**Printed A3 “card-board” and put
on the wall of the dairy/office**



Irish Cattle Breeding Federation

Striving to achieve the greatest possible genetic improvement in the national cattle herd for the benefit of Irish farmers, the dairy and beef industries and members. [Learn more about ICBF.](#)

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Services

- [HerdPlus](#)
- [GENE IRELAND](#)
- [Genetic Evaluations](#)
 - [Farm Software Bull Files](#)
- [Tully Beef Centre](#)
- [Milk Recording](#)
- [Herdbook Services](#)
- [Suckler Scheme](#)

ICBF Sign Up Form

ICBF Active Bull List:

[Dairy Active Bull List Spring 2008](#)[Beef Active Bull List Summer 2008](#)

Publications

- [This Week's Report \(pdf\)](#)
- [Past Weekly Reports](#)
- [Cattle Statistics](#)
- [Annual Reports](#)
- [Academic Papers](#)

Learn more about ICBF

- [Contact Information](#)
- [Costs and Benefits](#)
- [The Database](#)
- [Members](#)
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Any comments on the new icbf website can be submitted [here](#)

HerdPlus

Profit through Science

Online Services

User name

Password

[Where do I get my username and password?](#)

[Experiencing problems - Click Here](#)

Bull Search

Search by:

- ☒ Code, Tag, Herd Book No, ITT
- ☐ Name or part of name



ICBF Web Application

PAT CRONIN
Logged in at : 18-Jun-2008 21:50

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FERTILITY

Record AI/Natural Serve

Pregnancy Check

Fertility Report

Fertility Profile

Due 1st Serve

Due Repeat

Record AI Events

If you entered serve data incorrectly
Please click [here](#) to delete.

Note: Help on entering multiple serves, click [here](#)

Total: 77 animals
Selected: 0 animals

FB Jumbo	Animal Number	Lact No	Last Calved Date	Last Served Date	Num Serves	Last Served Bull	DATE Day / Mth / Year	Bull Used	Sire Check
54	IEFFTZ0054R	9	26-MAR-08	22-MAY-08	1	DZI			
55	IEFFTZ0055P	9	16-MAR-08	25-APR-08	1	BUJ			
68	IEFFTZ0068E	9	22-APR-08		0				
90	IEFFTZ0090M	9	01-MAR-08	20-MAY-08	1	NYB			
127	IE141763820127	8	19-MAY-08		0				
157	IE141763880157	7	22-MAY-08		0				
188	IE141763860188	7	19-FEB-08	26-APR-08	1	KSI			
217	IE141763810217	5	12-FEB-08	30-APR-08	1	UYC			
219	IE141763830219	6	05-FEB-08	06-MAY-08	1	UYC			

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ICBF Web Application

PAT CRONIN
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FERTILITY

[Record AI/Natural Serve](#)[Pregnancy Check](#)[Fertility Report](#)[Fertility Profile](#)[Due 1st Serve](#)[Due Repeat](#)

Fertility Profile for Herd

Total Number of animals:73

[Download File](#)

FB Jumbo	Animal Number	Calving Date	Lact Num	Last Served	Last Bull	Num Serves	Last Preg Diag	Days in Calf	Days in Milk	Dry Date	Exp Calving Date
382	IE141763820382	29-JAN-08	3	16-APR-08	KSI	1		63	141		23-JAN-09
407	IE141763810407	09-FEB-08	2	16-APR-08	LEV	1		63	130		23-JAN-09
463	IE141763890463	29-JAN-08	1	18-APR-08	UYC	1		61	141		25-JAN-09
470	IE141763880470	08-FEB-08	1	18-APR-08	DZI	1		61	131		25-JAN-09
499	IE141763830499	01-MAR-08	1	18-APR-08	KSI	1		61	109		25-JAN-09
411	IE141763860411	22-JAN-08	2	19-APR-08	KSI	1		60	148		26-JAN-09
475	IE141763840475	18-MAR-08	1	19-APR-08	DZI	1		60	92		26-JAN-09
405	IE141763880405	18-FEB-08	2	21-APR-08	UYC	1		58	121		28-JAN-09
464	IE141763810464	06-FEB-08	1	21-APR-08	UYC	1		58	133		28-JAN-09
496	IE141763890496	07-FEB-08	1	21-APR-08	LEV	1		58	132		28-JAN-09
415	IE141763810415	12-FEB-08	2	22-APR-08	UYC	1		57	127		29-JAN-09
420	IE141763870420	03-MAR-08	1	22-APR-08	DZI	1		57	107		29-JAN-09
474	IE141763830474	31-JAN-08	1	22-APR-08	LEV	1		57	139		29-JAN-09
528	IE141763870528		0	22-APR-08	LEV	1		57			29-JAN-09

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iv. Future Plans

- Complete roll-out of handhold technology.
 - ~80% of serves.
- Further develop web-based systems
- PDA's & Mobile phones.
- Key driver of uptake is simple recording systems & good information for farmers/industry.

2. Use of Insemination Data in GE



2. Use of Insemination Data in Genetic Evals.

- Current;
 - Data edits for female fertility.
 - Genetic Evaluation of Gestation Length.
- Future;
 - Gestation Length Improvements
 - Other Fertility Traits
 - Validation of Sire Births.

(i) Data edits for fertility

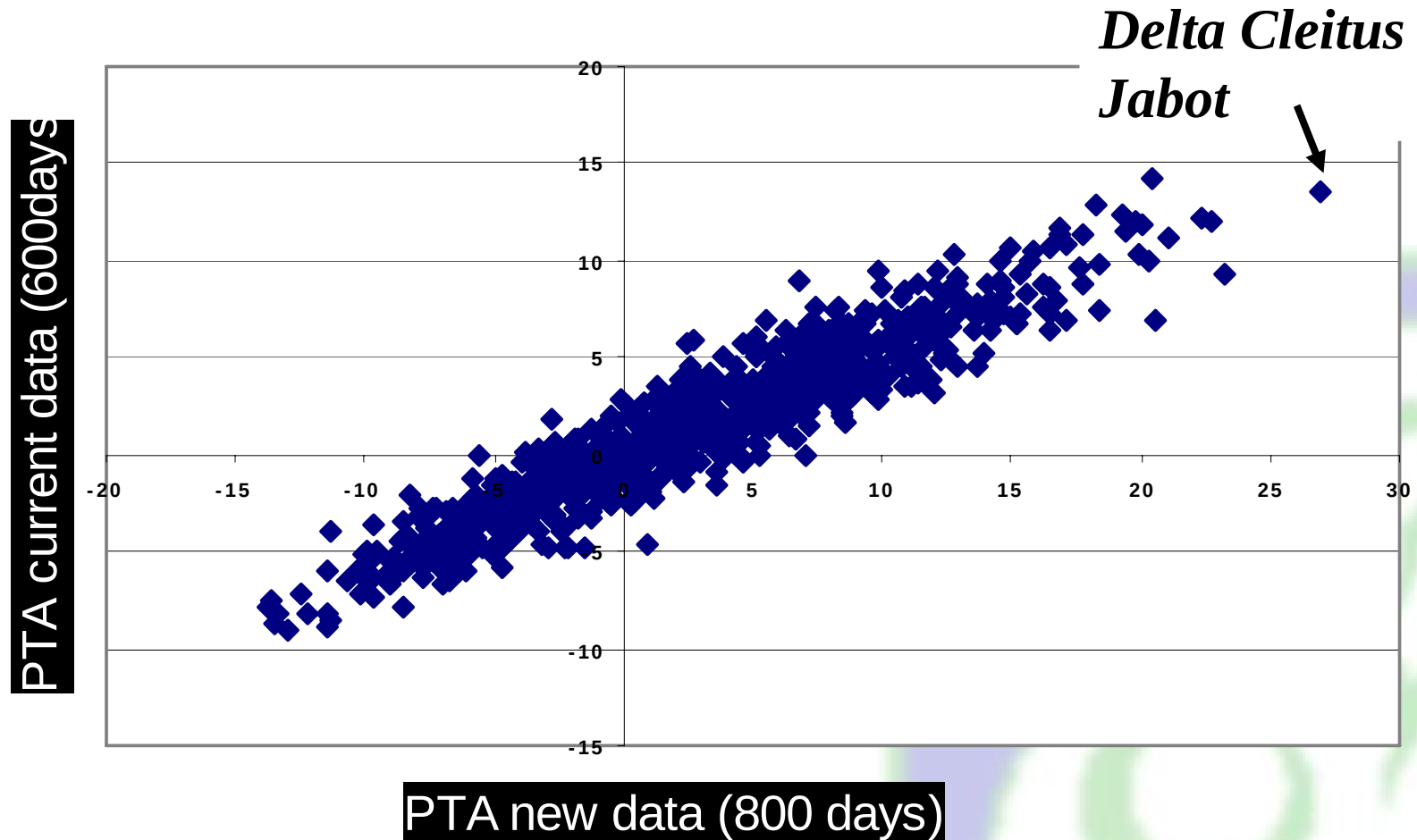
- Female fertility is a trait of major economic importance in Ireland (24% relative weighting in EBI).
- CI Days evaluated on basis of 300-600 days (& 600 days set to missing).
- Poor fertility bulls over-evaluated?
- Use insemination data to identify cows where an “attempt” to breed has been made.

(i) Data edits for fertility

Parity	1	2	3
Old Eval (Nov 07)	805,762	649,783	502,161
New Eval (Nov 07)	834,794	671,959	517,301
Difference	29,032	22,176	15,140

- 3% more records.
- Correlation = 0.93.
- Poor fertility bulls penalised most.

(i) Data edits for fertility



(ii) Genetic Evaluation of Gestation Length (direct)

Breed of AI Sire	No. Sires Evaluated	Raw Mean	Genetic Data	
			Mean	St Dev
Holstein	1,796	281.9	-1.0	0.98
Friesian	242	281.5	-1.5	1.07
Limousin	166	289.6	3.6	0.98
Charolais	153	288.5	2.3	0.89
Belgian Blue	131	284.6	-0.3	0.94
Angus	121	283.8	-0.3	0.87
Hereford	119	286.4	0.8	0.91
Simmental	95	288.5	2.3	0.93
Montbéliarde	93	286.9	1.4	1.03

(i) Future; Gestation Length

	1 st Parity (Direct)	Later Parity (Direct)	1 st Parity (Maternal)	Later Parity (Maternal)
1 st Parity (Direct)	0.36	0.74	0.01	-0.03
Later Parity (Direct)		0.44	0.03	-0.24
1 st Parity (Maternal)			0.04	0.89
Later Parity (Maternal)				0.08

- High heritability (dir=.40, mat=0.06)
- High correlations between parities
- No correlation between direct & maternal.
- Multi-trait calving evaluation for Gestation Length, Calving Difficulty & Calf Mortality.

(ii) Future; New Fertility Traits

Trait	Number of records	Mean	h2
Calving to 1st Service	45,370	83.16	0.0579 (0.0105)
Calving Interval	55,910	395.4	0.0187 (0.0054)
Submission Rate (21d)	36,224	0.6466	0.0160 (0.0057)
Number serves	45,370	1.535	0.0120 (0.0044)
Pregnant to first service	29,656	0.5166	0.0082 (0.0052)
Pregnancy rate (42 days)	29,646	0.6233	0.0355 (0.0096)

- Range of new fertility traits being examined – using insemination data.
- Calving to 1st service – promising.
- Currently looking at correlations with goal traits (CI Days) as an early predictor trait.

(iii) Future; Validation of Sire ID (insem vs. birth)

Month of Insemination	Number of insemination & birth records*	Number of sire errors	Error rate
Apr	17,341	488	2.8%
May	25,102	1,769	7.0%
Jun	6,192	914	14.8%

** Within 280-290 days*

- 6% errors between sire identified at birth & insemination record.
- Increases with season (stock bulls)
- What to do next?

3. Use of Insemination Data in Decision Support



3. Use of Insemination Data as a Support Tool

- Farmers;
 - Farm fertility management reports
 - Sire Advice Information
- AI Companies;
 - AI Management Information
 - Invoicing & semen stock.
- Future Plans.

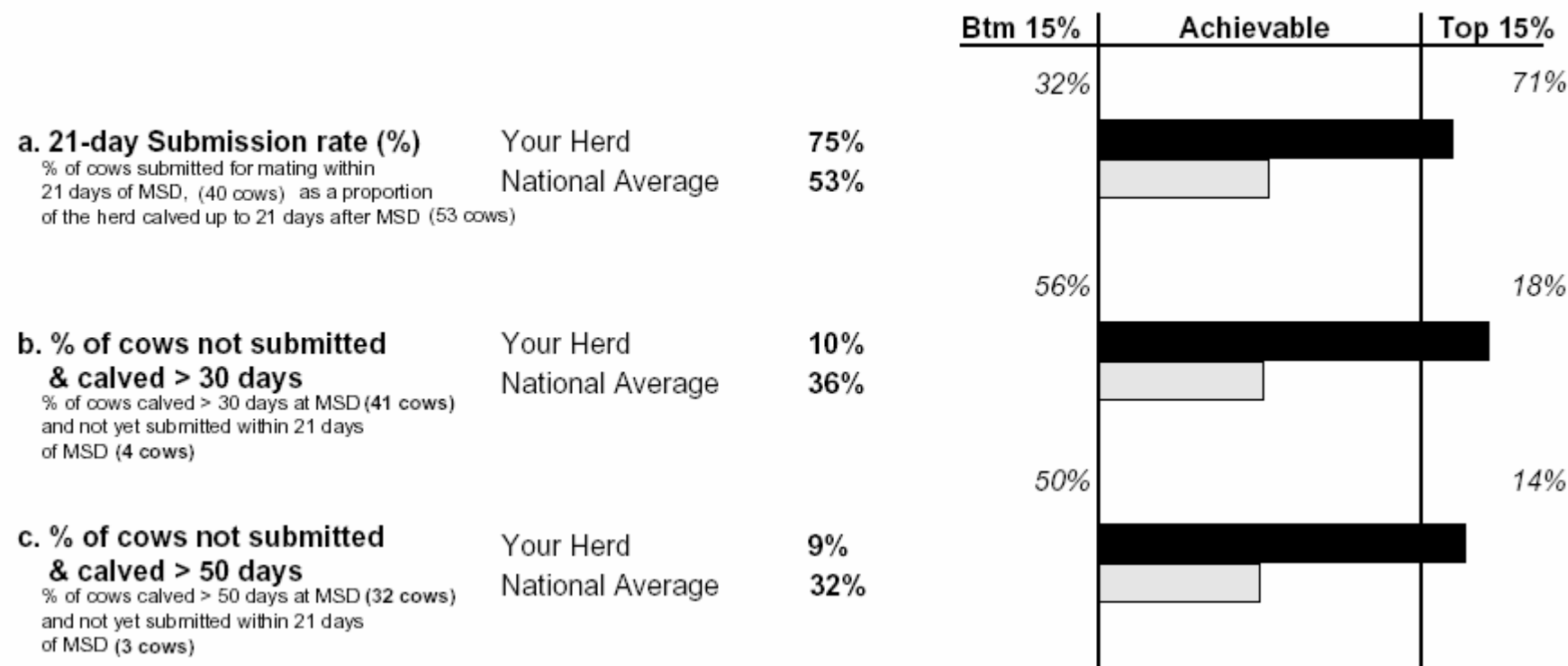
Farmer Fertility Reports

- Range of reports
 - During season (3 weeks, 6 weeks & 9 weeks)
 - End of breeding season.
- Key performance statistics & Action Lists for cows.
- Available by web or paper.

Fertility Reports; 3 weeks

2. Herd Performance

The performance of your herd has been expressed relative to other recorded herds (with a minimum of 30 calvings)



Fertility Reports; Problem Cows

4. Action List

Do not return this sheet to the Animal Events office.

The following cows may have reproductive problems and should be investigated further. Note that this list may include cows to be culled.

Cows not yet submitted for service that have calved greater than 30 days.

FB	Cow ID	Lactation	Calving Date	Days in Milk	Problems/Treatments
68	IEFFTZ0068E	9	22/04/2008	39 days	
264	IE141763880264	5	01/04/2008	60 days	
267	IE141763820267	5	28/03/2008	64 days	
478	IE141763870478	1	11/04/2008	50 days	
483	IE141763840483	1	15/02/2008	106 days	

Fertility Reports; End of Season

Calving

Calving period

Start	29/01/2007
Median	16/02/2007
Finish/Last calving	30/04/2007

Related events

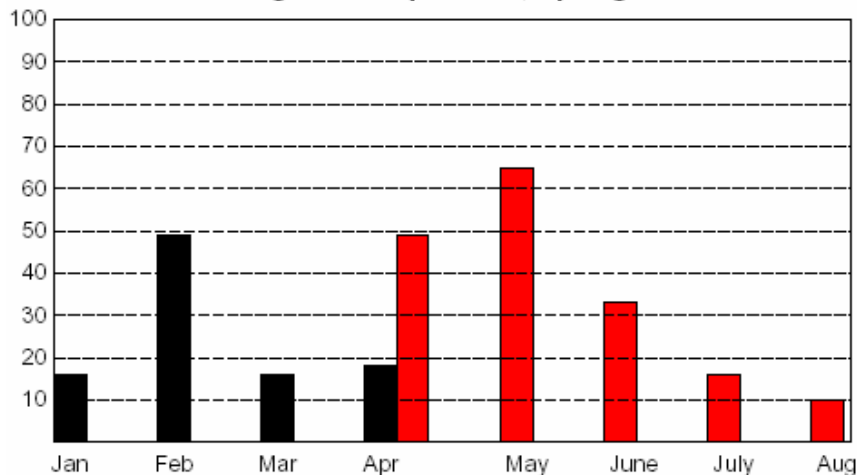
Total cows calved during the calving period	49
Calving interval (days)	371 days
% cows calved by 6 weeks	74%

Mating

Mating period

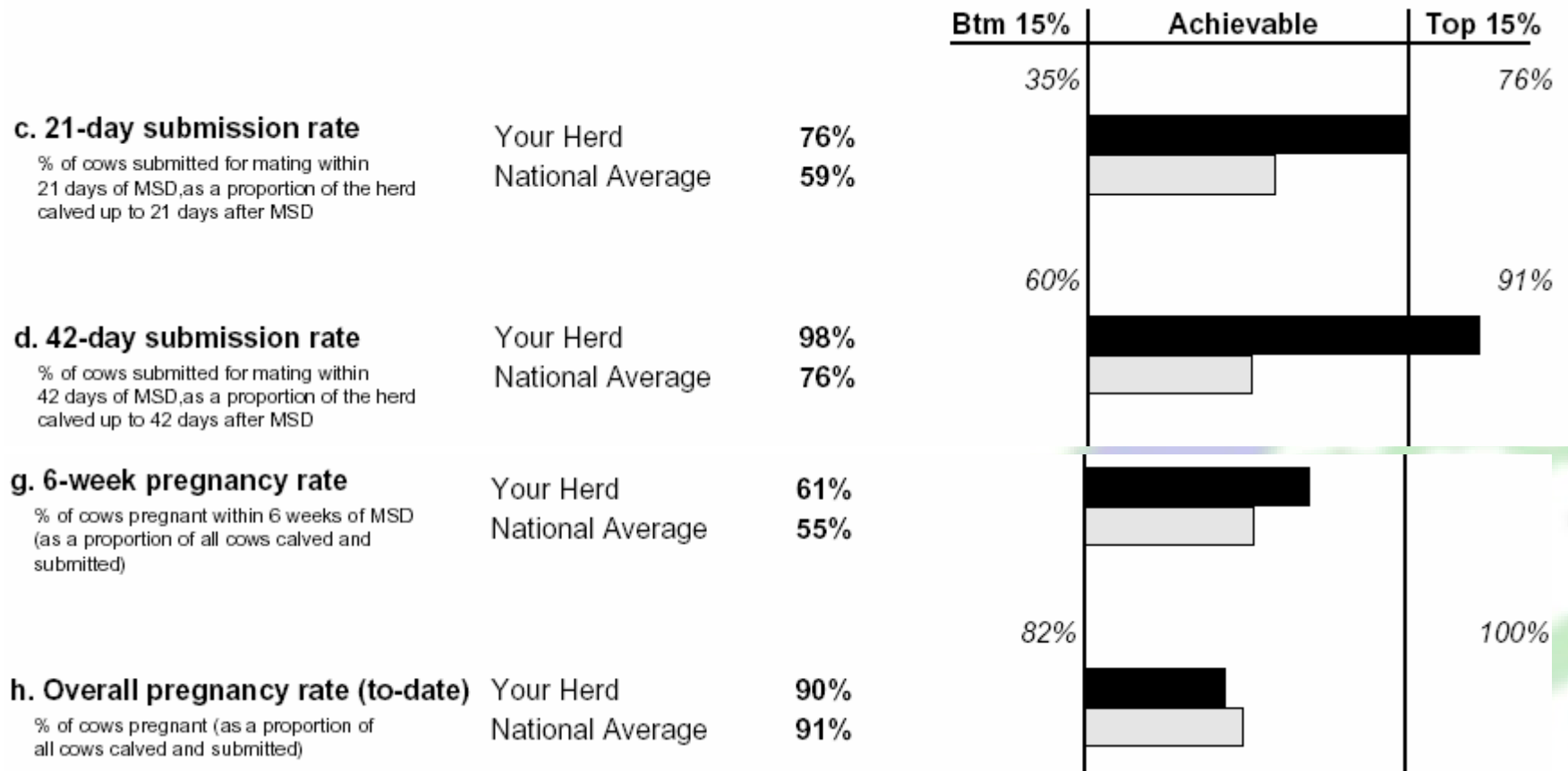
Mating Start Date (MSD)	20/04/2007
Finish/Last serve	16/08/2007
Length breeding season	16 weeks 6 days
Cows calved and served	49
Number of serves	91
Cows confirmed pregnant	44

Calving & serve patterns, Spring 2007



- Farmer friendly reports for end of breeding season.

Fertility Reports; End of Season



Sire Advice for Farmers

- Run by farmer, AI company or “default.”
 - Max EBI, min inbreeding, min cost of semen
- All bulls & breeds.
- Allocated to cows.
- Bull selection saved – loaded to AI handheld + included on breeding chart.
- Completing the loop;
 - Cow calves.....Genetic evaluation....Sire Advice.....Information to farmers....Recorded insemination.....Due Calving....Cow calves....

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Suggested Bulls List

Bull	Name	HO %	EBI	Milk Fertility	Calv Beef	Health	M Kg	F % F Kg	P % P Kg	CI (days) Surv %	Supplier
GIO	GIBOR	97	€191	€71 €38	€25 €6	€14	479	-0.19 7.5	-0.01 15.2	-2.85 4.80	Dovea
WUZ	WINDSOR-MANOR DURHAM ZEUS	100	€167	€48 €107	€14 €8	€6	338	-0.19 2.2	+0.00 11	-4.70 4.51	Munster / Progressi
RDU	RUUD 96	100	€163	€74 €53	€35 €1	€0	397	+0.06 18.5	-0.01 12.5	-3.16 1.35	Munster / Progressi
CBH	CORBOYS HACKETT	69	€147	€55 €33	€31 €14	€8	102	+0.11 9.5	+0.08 7.5	-3.94 3.22	
BWZ	ZANDER KEET	100	€141	€66 €50	€39 €7	€8	95	+0.22 15.5	+0.09 8	-2.56 1.75	
TIH	TITTENSER HYLKE	FR	€136	€17 €106	€24 €7	€4	-340	+0.17 -5.5	+0.23 -1	-6.40 2.59	Dovea

* Will affect Pedigree Status

Allocate Bulls to Cows

Edit Suggested Bulls

Select Breed

Holstein/Friesian

☐

Pure Friesian

☐

Select AI Organisation

ABS

☐

Alta Ireland

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AI Management Information

- Fertility management reports
 - Bull, technician, region.
- Semen invoicing & stock control
 - No “docket processing” – real-time information.
 - Timely invoicing.
 - Better stock control management
- ***Better for AI company & farmers.***

AI Management Data – Future Plans

- More reports for AI companies.
- Getting reports back to farmers;
 - 3 weeks, 6 weeks, 9 weeks....but paper based?
 - Key performance indicators & SMS text messaging.
- ICBF Active Bull List.
 - Availability of AI bulls.

Summary

- Insemination data is a key component of effective breeding.
 - Cow calves.....Genetic evaluation....Sire Advice.....Information to farmers....Recorded insemination.....Due Calving....Cow calves....
- ICBF; 2-pronged strategy;
 - Better data collection (handhelds & web)
 - Better reports (high value & timely)
- Results in better data for genetic evaluation.
- **More profit for Irish farmers (€)**



Thank You.