

An International Perspective on Dairy Herd Fertility

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FOOD AND NATURAL RESOURCES

J. Dairy Sci. 84:1277–1293

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ADSA Foundation Scholar Award

Reproductive Loss in High-Producing Dairy Cattle: Where Will It End?¹

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Causes of poor reproduction are multifactorial:

- **Nutrition**
- **Management**
- **Genetics**
- **Health**

J. Dairy Sci. 84:1277–1293

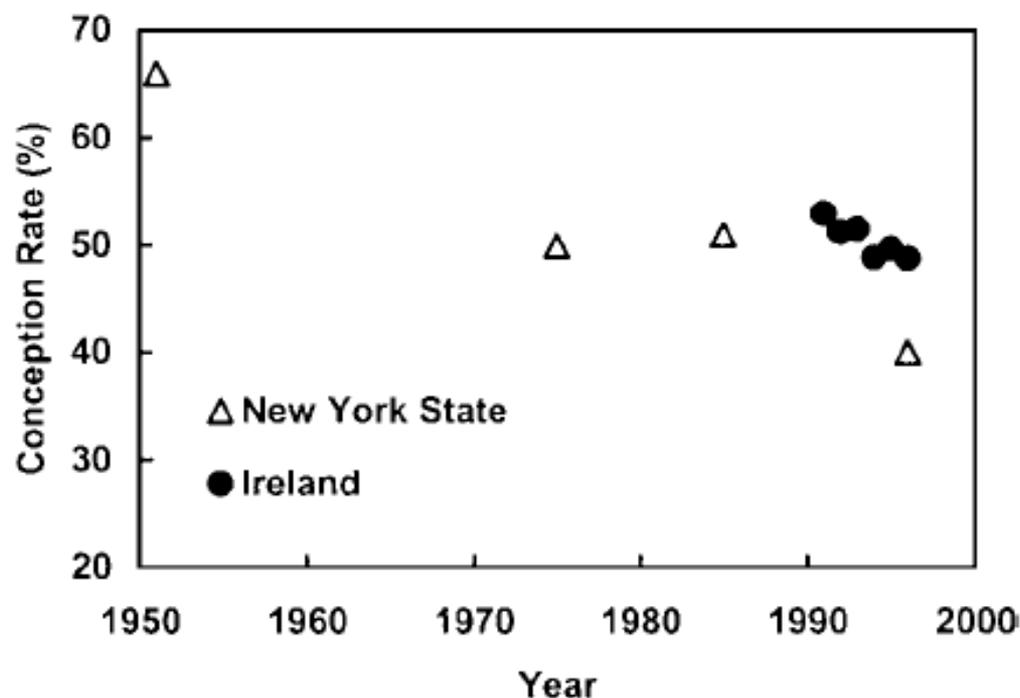
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Yearly averages for conception rate to artificial insemination for lactating dairy cows in either New York State (United States; Butler, 1998) or Ireland (O'Farrell and Crilly, 1999) during the past half-century.

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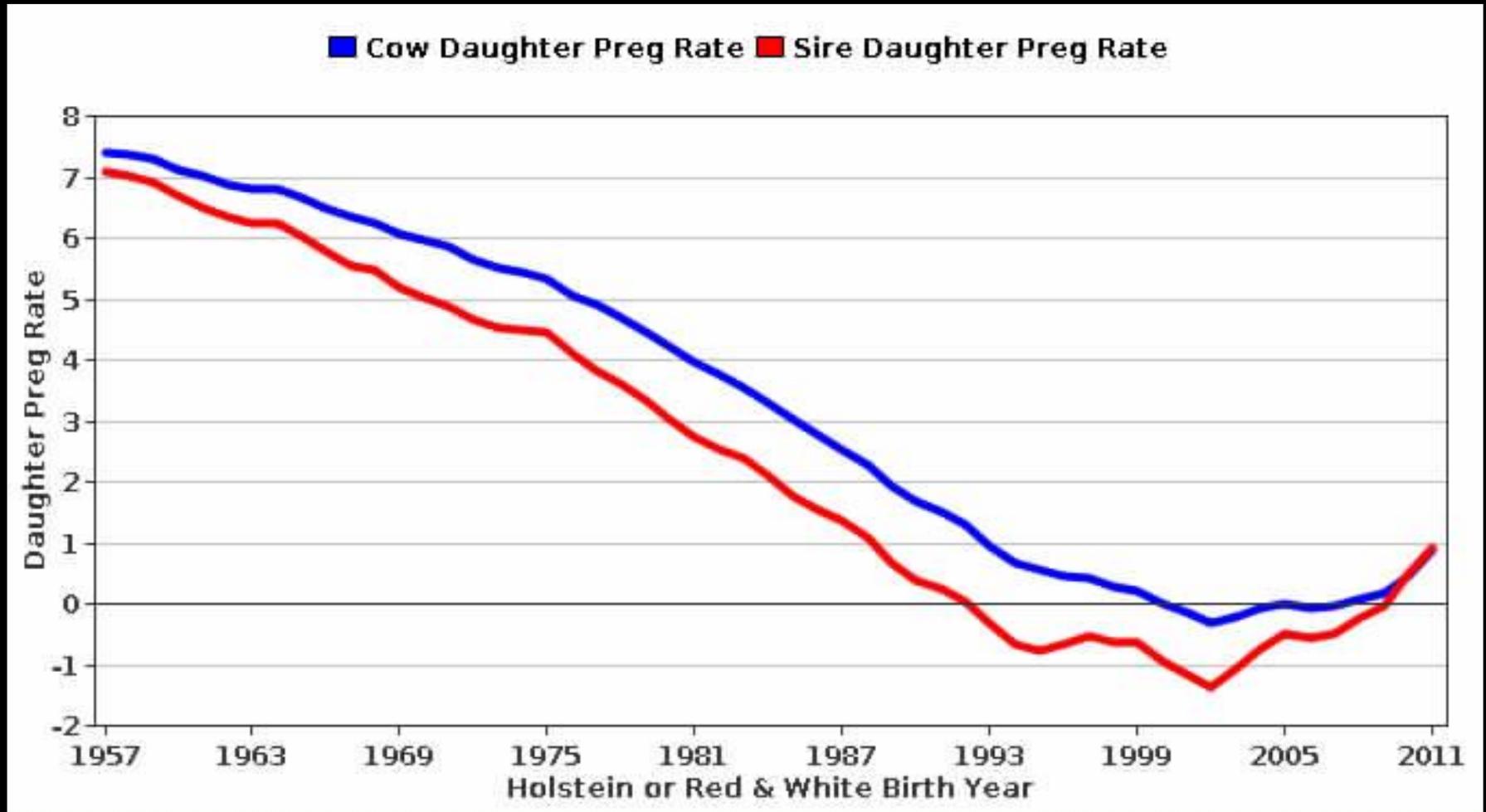
2013

Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning.

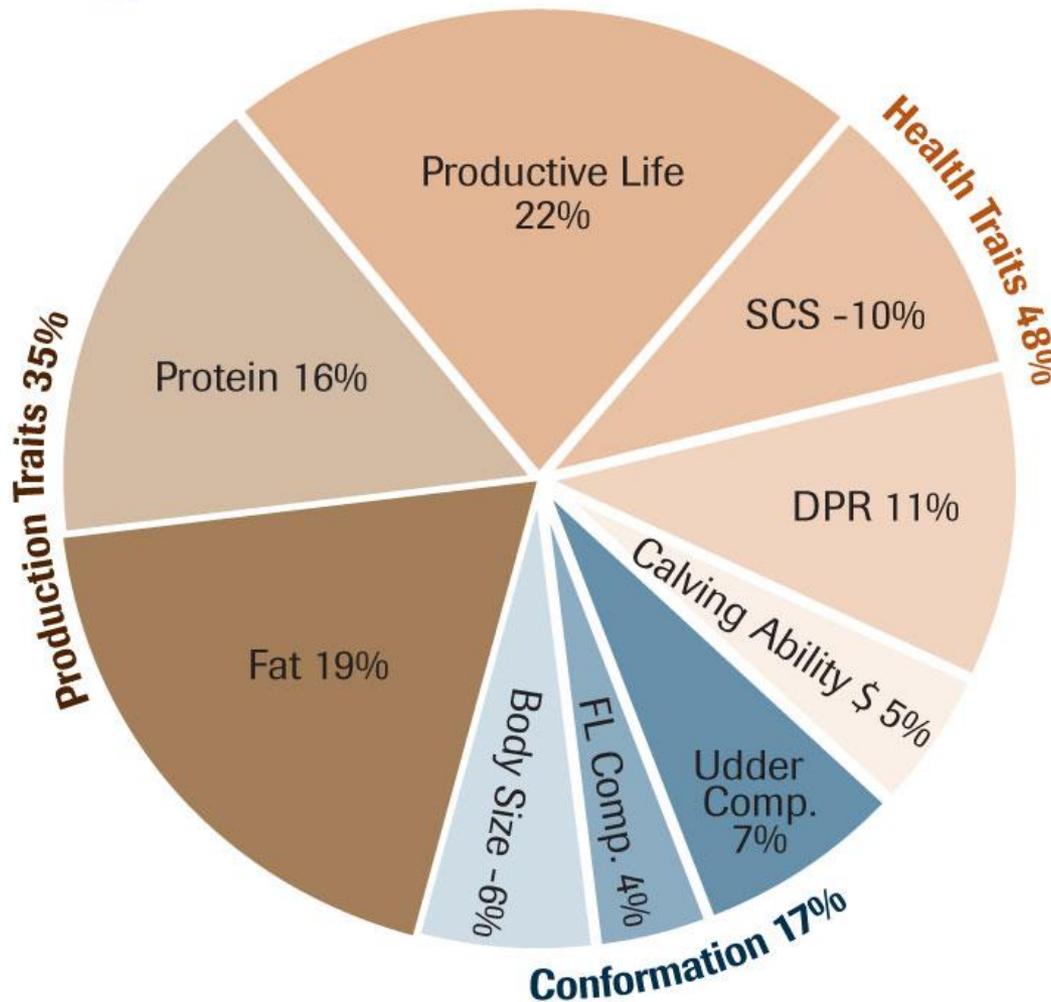
Sir Winston Churchill

9 November 1942

Daughter Pregnancy Rate (USA)



the new
^ **Lifetime Net Merit**



Source:
“Updated Economic Index Promotes Profitability”
By Angie Coburn
Associate Vice President -
Dairy Genetics, Genex
January 2010

Ever-Green-View My 1326-ET

Waldo, Wisconsin USA February 2010



32,805 kg of milk*

1,267 kg fat

974 kg protein

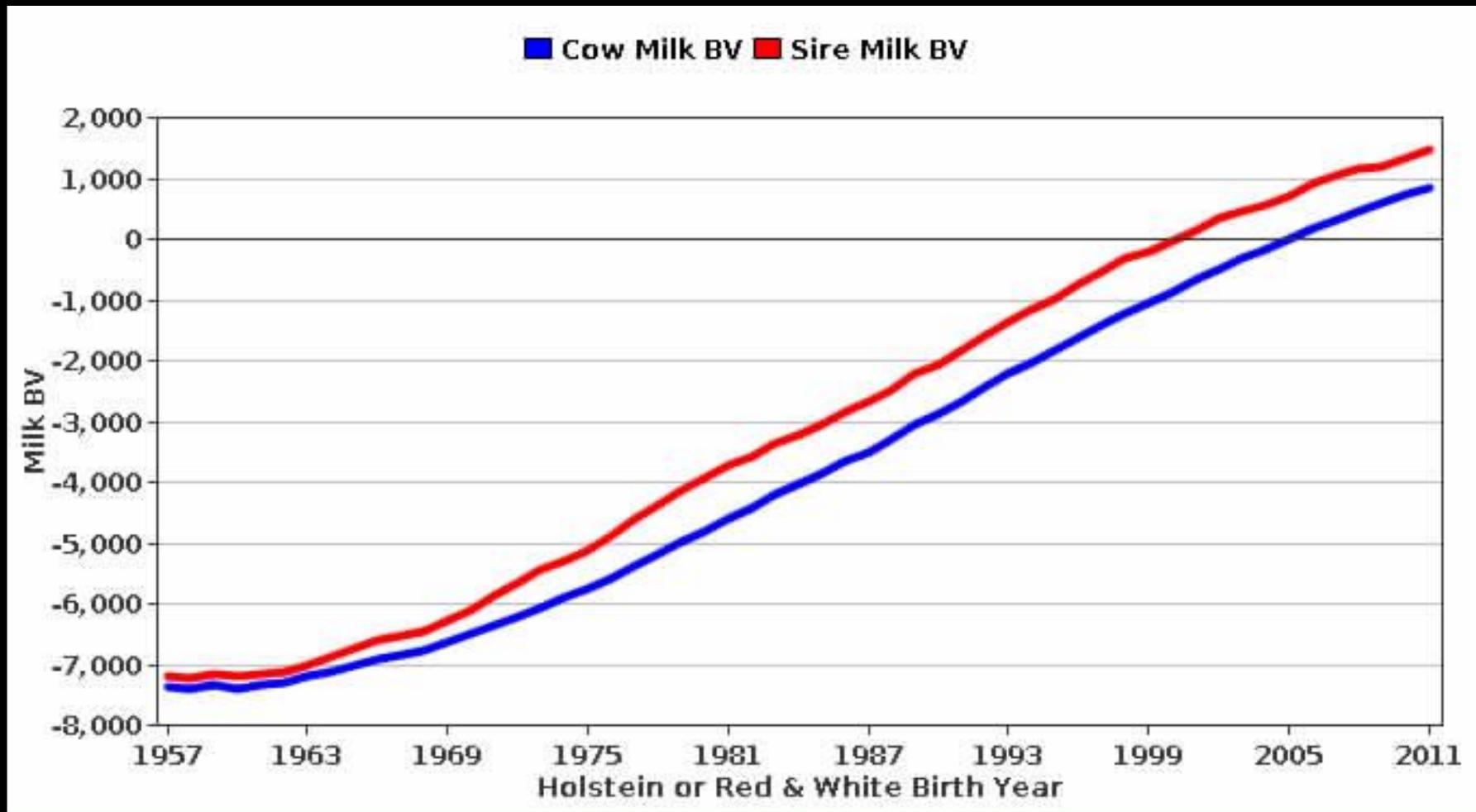
1,575 kg lactose

365 d lactation

***3-times average**

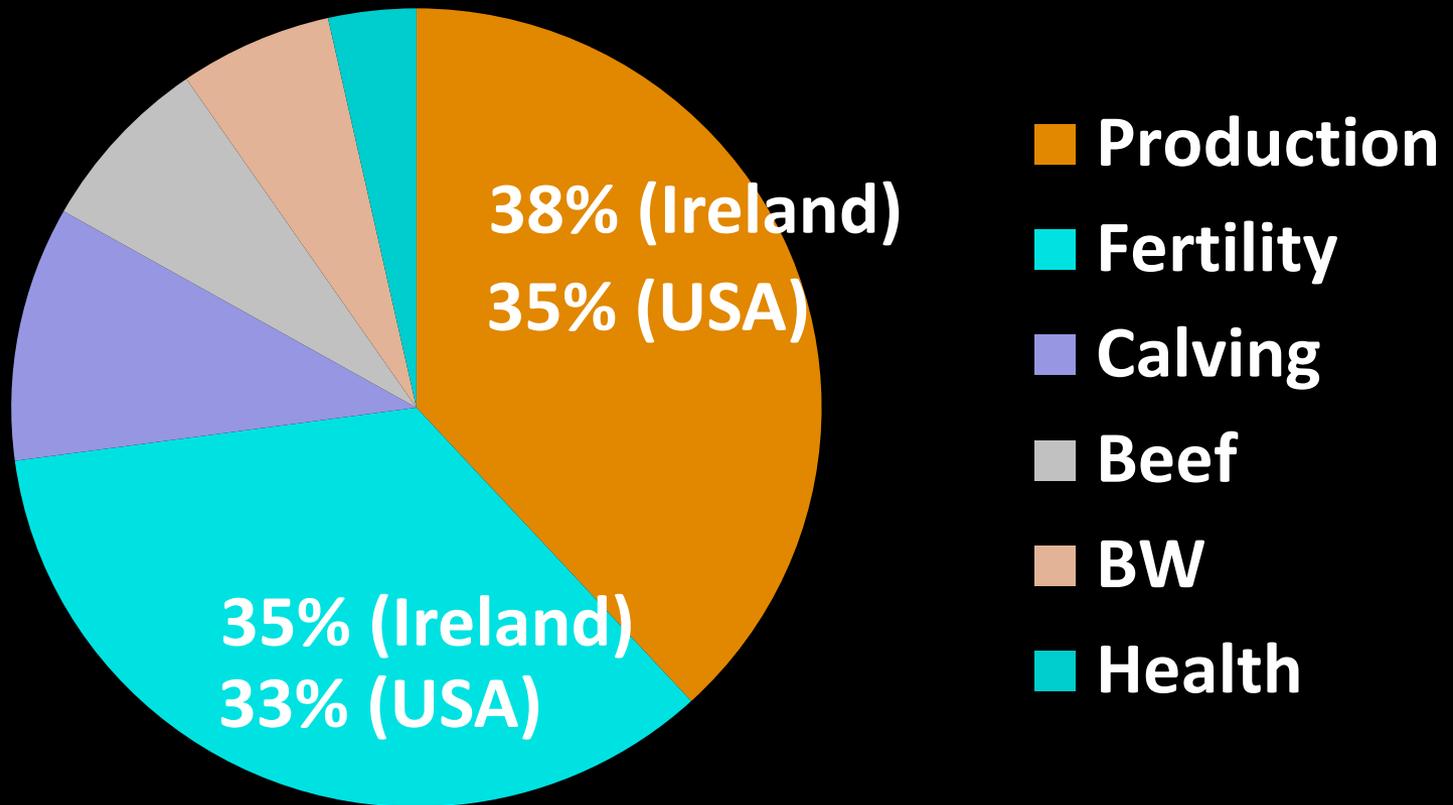
US cow in 2010

Fluid milk (USA)



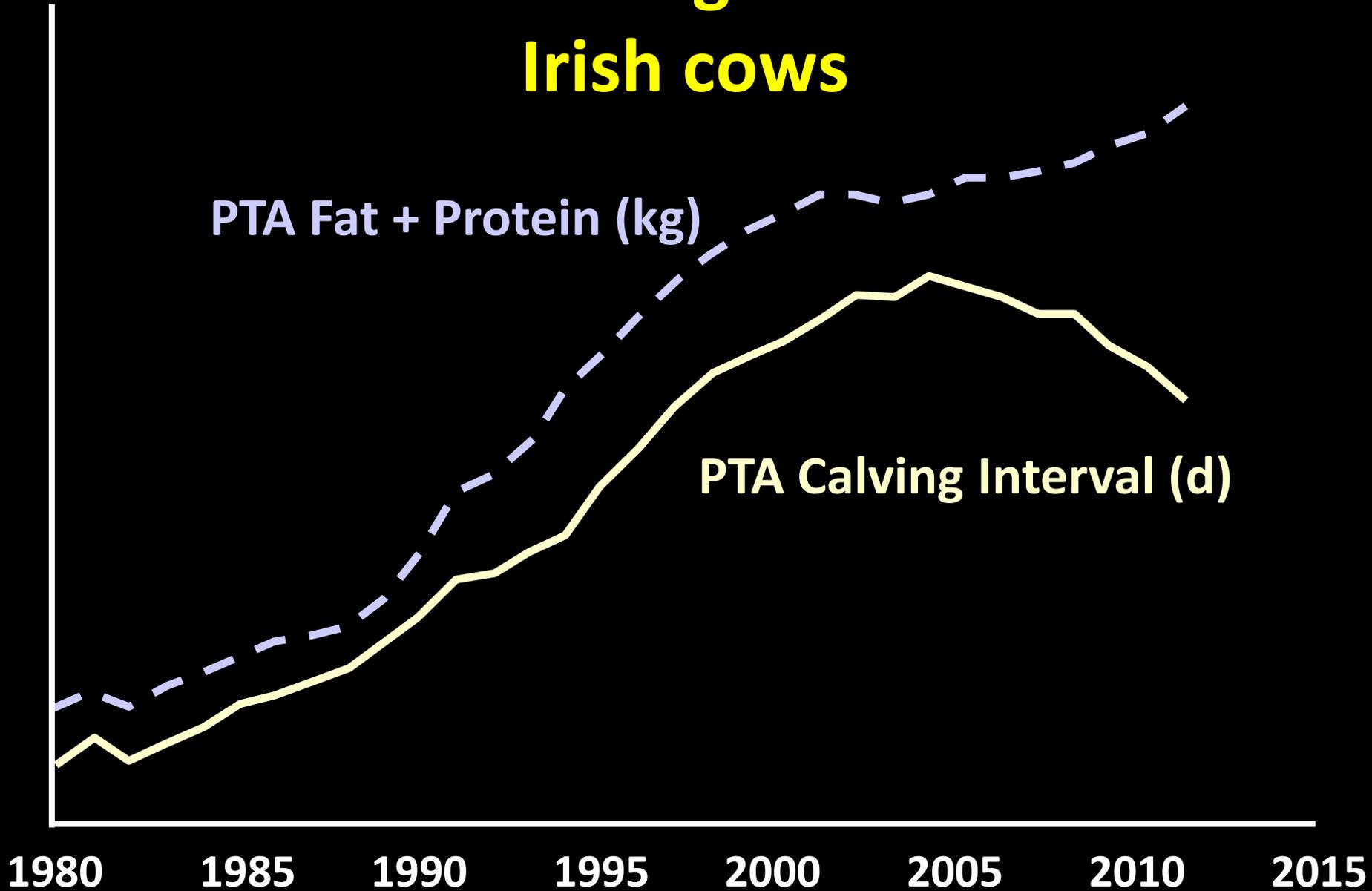
EBI (Ireland) vs. Net Merit (USA)

EBI



Genetic change over time

Irish cows



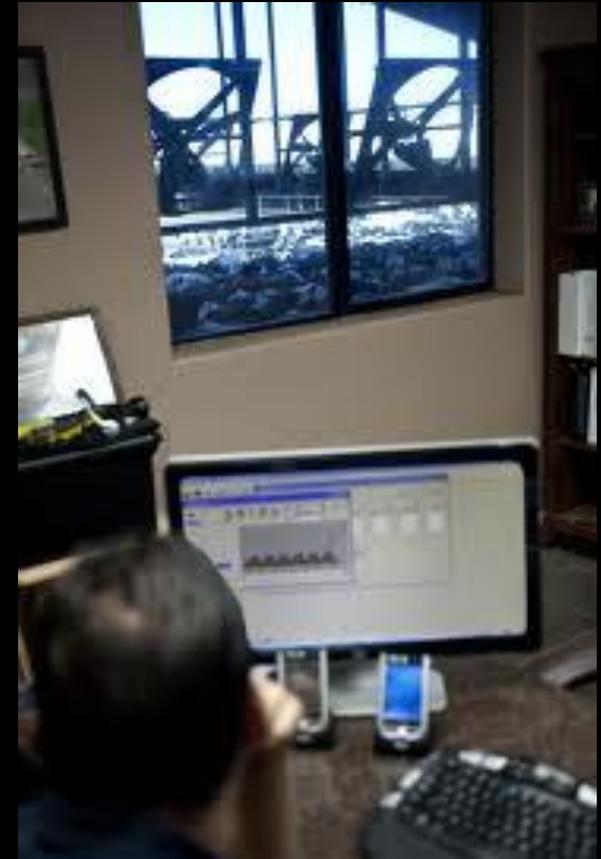
Dairy Reproduction in the USA 2001-Present

- **Unprecedented change in the US dairy industry**
- **Unprecedented technological advances and innovation in dairy reproduction**

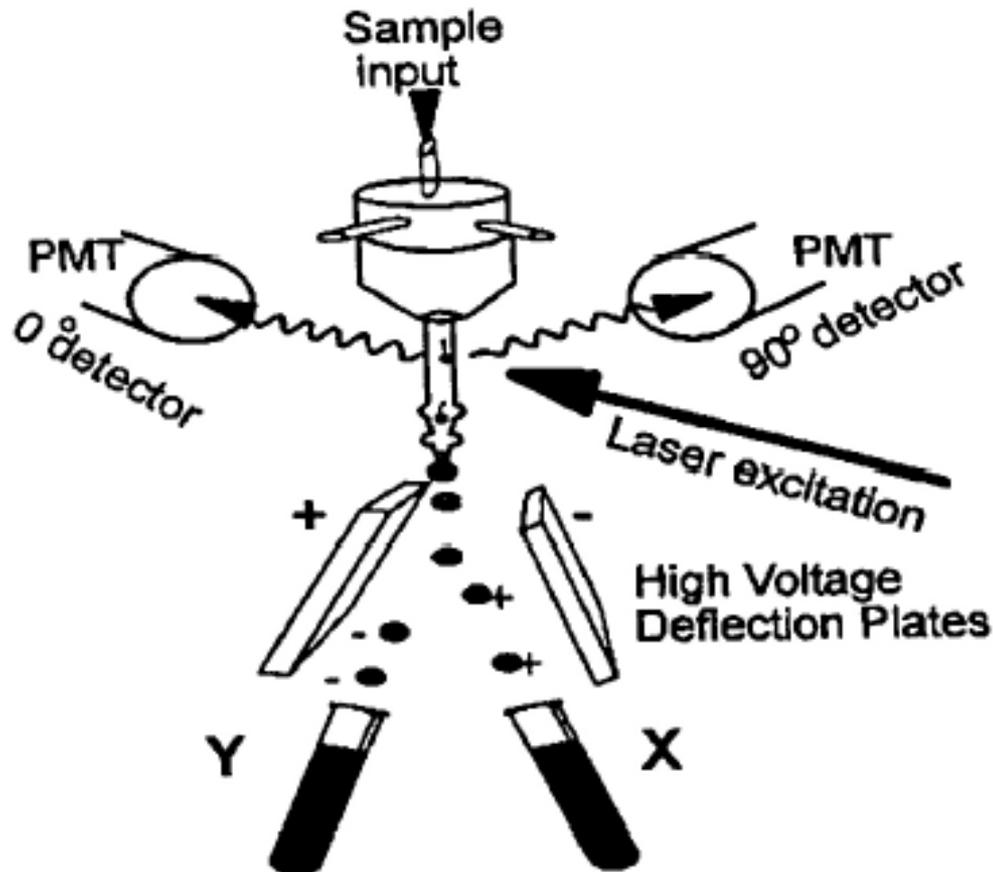
Innovations of the past decade:



Innovations of the past decade: Improved systems for automated estrus detection



Innovations of the past decade: Gender selected semen



Genex
Cooperative, Inc.

A Subsidiary of Cooperative Resources International

Innovations of the past decade: Better and more portable ultrasounds

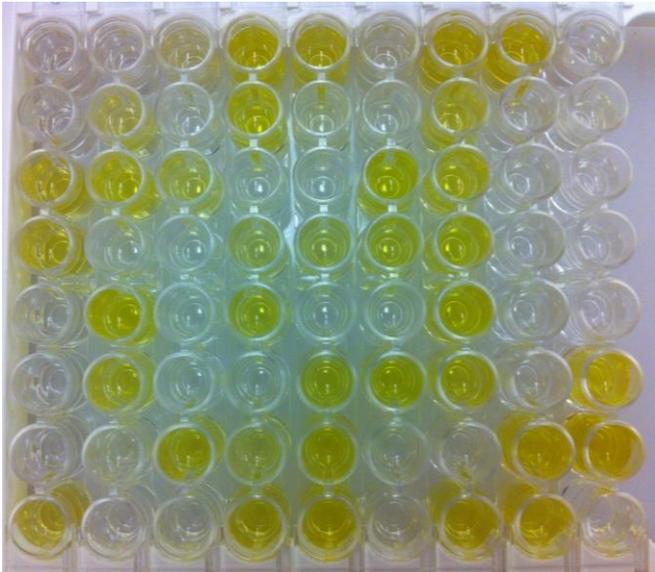


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Innovations of the past decade: Blood pregnancy tests



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bio TRACKING

TESTING

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for DAIRY CATTLE

for BEEF CATTLE

for GOATS

for SHEEP

for WILDLIFE

for BISON

for HORSES

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DG29™
Bovine Pregnancy Results on Demand

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with milk.



Innovations of the past decade: Automated Milk Progesterone Testing

Förster Technik: FT Multilyser

DeLaval: Herd Navigator



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Herd Navigator™ is the future solution for the professional farmer who wants proactive herd management.

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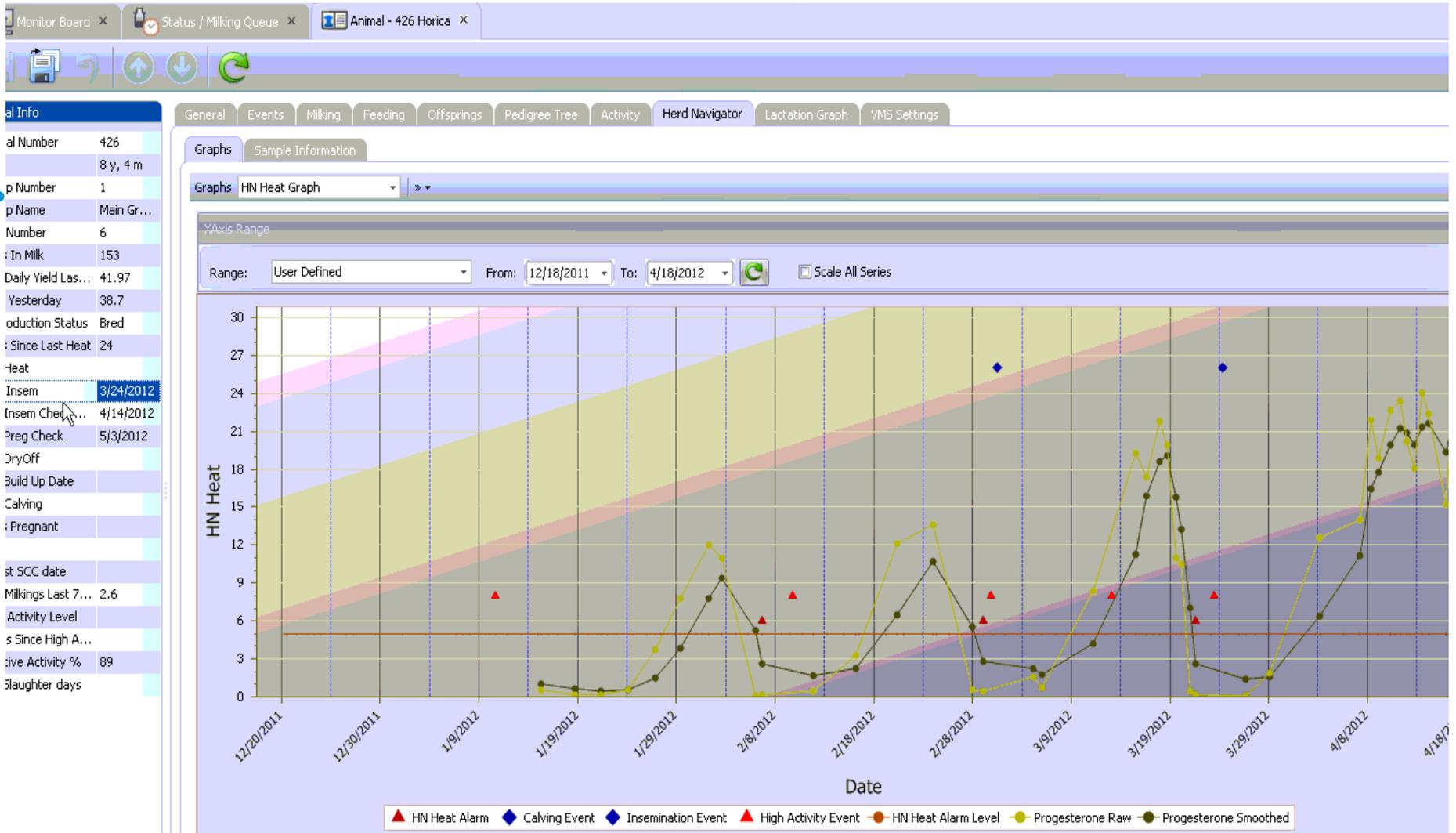


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Herd Navigator System (DeLaval)



Cow 426 – Reproductive Graph



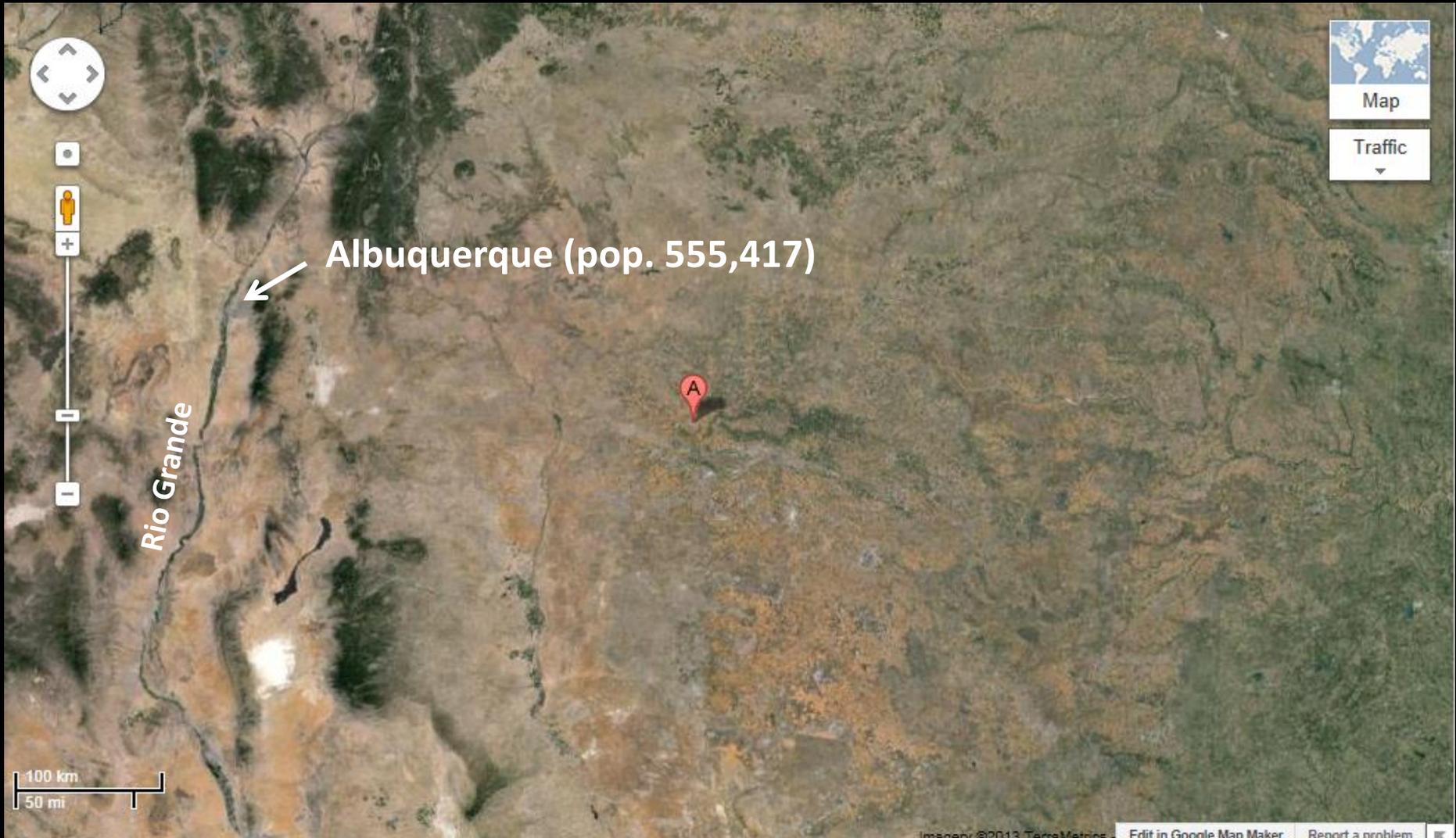
New Mexico (United States)

- **172 dairies**
- **Average herd size 2100 cows**
- **Average milk production per cow 11,500 kg/year**

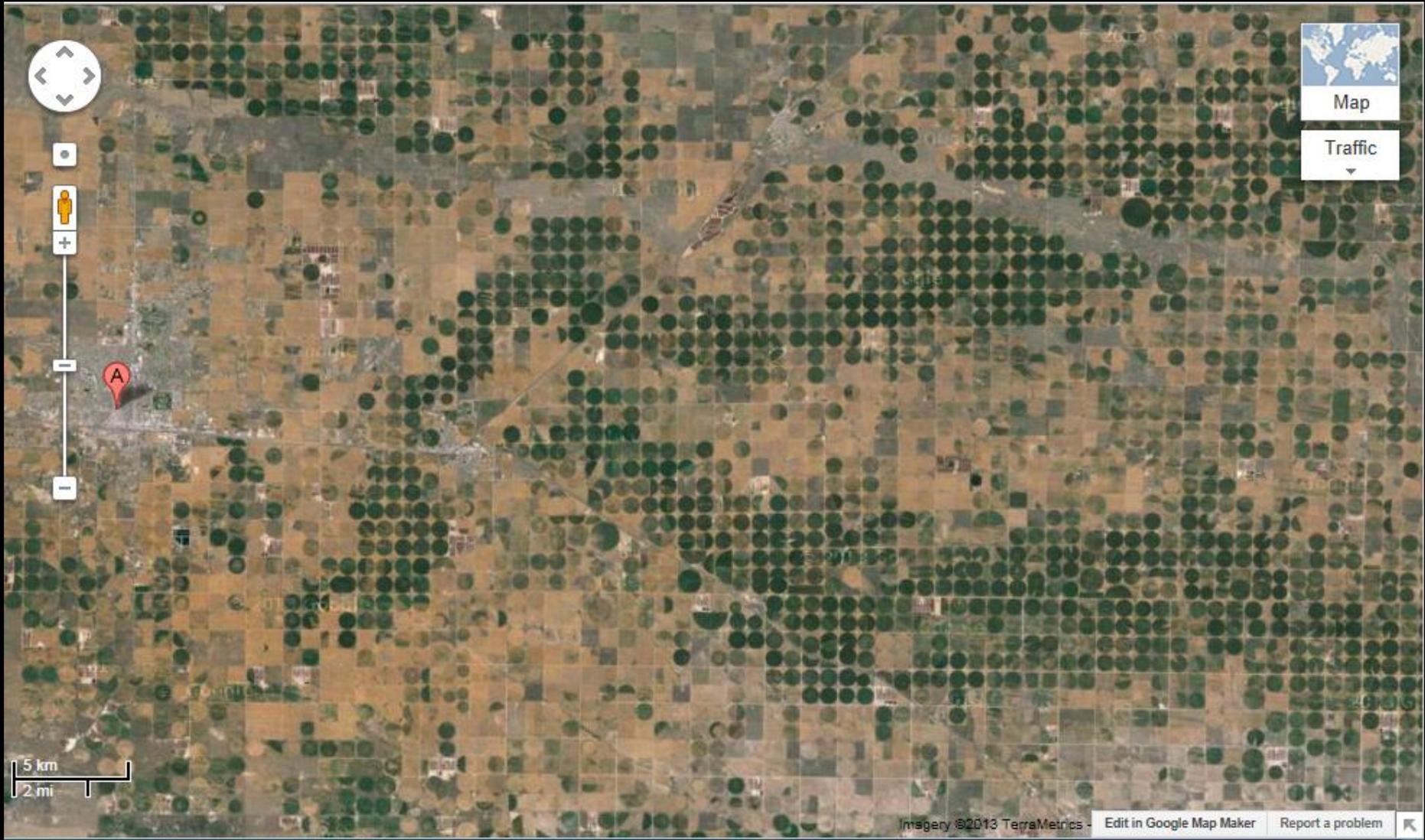
Clovis, New Mexico



Clovis, New Mexico



Clovis, New Mexico



Clovis, New Mexico





Doing the math in New Mexico

- **2100 cow herd**
14 month calving interval
30% replacement rate
35% conception rate to AI
- **105 pregnancies every month**
- **300 cows found in heat every month**

Fixed time AI (TAI) Program (Presynch-Ovsynch)

Sun	Monday	Tues	Wednesday	Thurs	Fri	Sat
Week 1			Injection 1 (PGF)	Organize groups of 50 – 100 cows based on calving dates.		
Week 2						
Week 3			Injection 2 (PGF)	Start program on group at about 1 month postpartum		
Week 4						
Week 5	Injection 3 (GnRH)					
Week 6	Injection 4 (PGF)		Injection 5 (GnRH)	TAI	60 days postpartum	

Morning lock down (NM)



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Radiofrequency ID (RFID) (electronic ear tag)

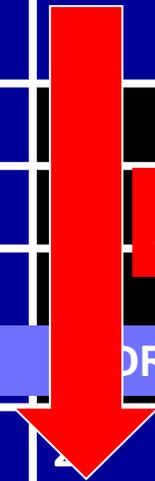


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TAI Breeding Calendar – PAG only – 28 d resynch

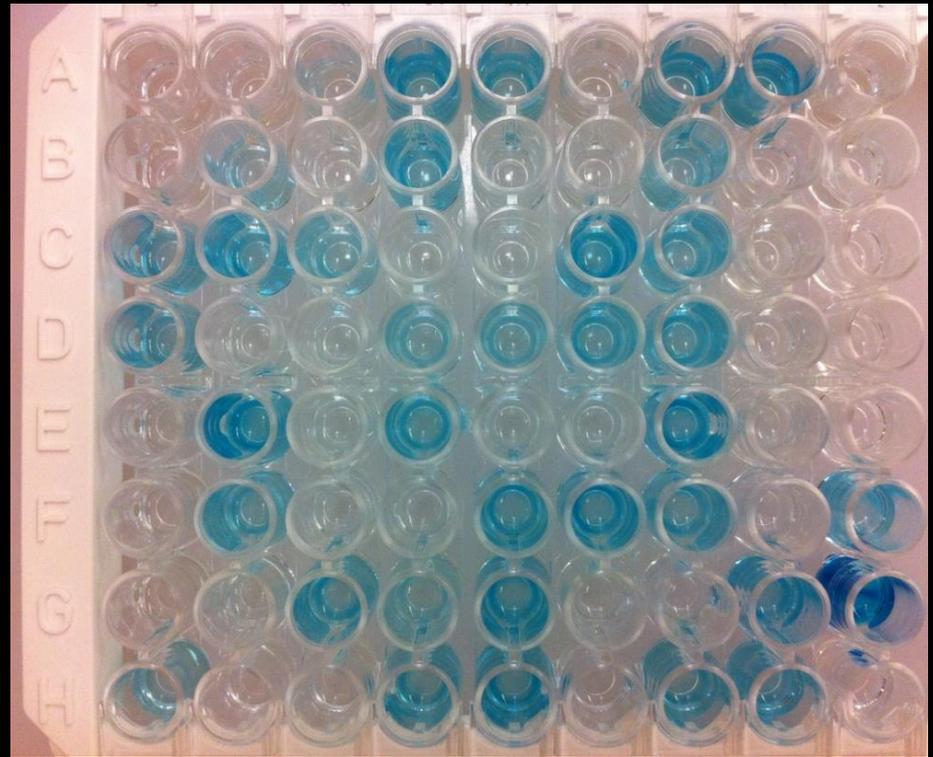
Sun	Mon	Tue	Wed	Thur	Fri	Sat
Week 1	GnRH (3)					
Week 2	PGF (4)		GnRH (5)	TAI	1	2
Week 3	4	5	6		8	9
Week 4	11	12	13			16
Week 5	18	19	20		22	23
	GnRH				OR	
Week 6	25 PREG ✓ PGF	26	27 GnRH	28 TAI	29	30
Week 7	32	33	34	35	36	37



28 Days

No heat detection

**Blood pregnancy
test (PAG)
25 days after AI
Blue = pregnant
Clear = open**



103 cows

First AI pregnant

55.3%

Resynch AI pregnant

41.3%

4 week in-calf rate

73.8%

Innovations of the past decade: Bovine SNP chips and the identification of fertility markers

FIGURE 1: BOVINESNP50 BEADCHIP



The BovineSNP50 BeadChip features more than 54,000 evenly-spaced SNPs across the entire bovine genome.

Redefining high fertility



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Now is the time to define “high fertility”!



**Pregnant after an observed
in estrus and AI**



Pregnant after a timed AI

Now is the time to define “high fertility”!



**Pregnant after an observed
in estrus and AI**



Pregnant after a timed AI

1.07 million Irish dairy cows On farms on 30 June 2013



Take home messages for Irish dairy farmers

- Real progress is being made toward improving fertility and increasing milk production per cow in both the USA and Ireland.
- Be aware and open to new technology that can increase productivity and bring calving interval to the desired 365 days in Ireland.
- Define what “high fertility” means and make sure that the genetics of Irish cows of the future meet your needs as dairy farmers.



Thank you!