Agri-Food and Biosciences Institute



## BovIS - The Power of Integrated Data

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## So much data but no information

- Too much data held in isolation across the agri-food supply chain
- Integration opens up the possibility for a wide range of applications including:
  - supply chain risk management
  - assessment of policy impact
  - genetic improvement performance, health, fertility, product quality
  - on-farm decision support tools
- Potential benefits of integrated databases being utilised in many other sectors e.g. medicine, social sciences, engineering



 Agri-Tech Strategy – establishment of a UK Centre for Informatics and Sustainability Metrics (up to £10M government investment) – AFBI is in bid consortium



## Within UK Agriculture what is happening?

Linkage of data for genetic evaluations (e.g. EGENES)







Pedigree Breed Society data

~5,000 beef animals weighed



110,000+ cattle genotyped 1000bullsgenomes.com

45 million cattle in national d/b (161 M movements)

500,000 carcass/yr. 100,000 VIA/yr.

 Through intelligent data management, integration and analysis robust information is provided to producers help select breeding animals

 Enables the development of decision support tools based on data unique to individual farms with minimal or no additional data entry

## Intelligent data management and integration – potential impact on livestock production

Genetic improvement alone estimated by EGENES (UK example)

- 75% greater increase in farm profitability (£54 million to beef farmers)
- EPLI increase profitability of the dairy sector by £634M (2008-2013) and reduced greenhouse gas emissions by 8.4%
- PiGIS £30m per year could be realised by GB and NI pig producers through delivering carcasses in line with market requirements

Wide range of projects internationally to identify genetic markers using data held in integrated databases

e.g. "Integrated Program for Reducing Bovine Respiratory Disease..." "National Program for Genetic Improvement of Feed Efficiency.."



## What progress has been made in Northern Ireland on an integrated cattle database?

 AFBI, through DARD & AgriSearch funding have created the Bovine Information System (BovIS)
 BovIS

Integration of government and industry data

- Animal and Public Health Information System (APHIS)
- Carcass data from NI abattoirs





**Bovine Information System** 

### How does the BovIS carcass database work?



## Benefits of BovIS throughout the supply chain Industry level

- In conjunction with the LMC
  - Provides a comprehensive overview of Northern Ireland beef production each year
  - Identifies breeding strategies to meet a range of market specifications with the maximum possible production efficiency
  - > Review and monitor the impact of policy decisions
  - Provide a framework for future genetic evaluation and research programs

### Structure of the beef industry

	2009	2010	2011	2012	2013
Number of herds	1:	1: 25% reduction			906
Mean per herd		38			
101 + herd (%)	4.8	5.4	5.2	5.2	6.2



## Carcass gain- room for improvement





## Reproductive performance: room for improvement





## Using BovIS to assess the impact of changing market requirements

Conformation	% of Cattle	Carcass Weight (kg)	Carcass Weight minus 10kg (% cattle)
Е	0.5	446	0.5
U	18.1	377	16.5
R	41.5	334	37.3
O+	13.3	304	16.1
O=	9.1	294	10.0
0-	8.6	282	8.6
Р	8.9	262	11.1

10 kg reduction in slaughter weight

 3% reduction in prime cattle achieving in spec conformation grades

- 4.7% reduction in income to producers (steers)



# BovIS **Bovine Information System Online Growth Monitoring tool**





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Bovis

Payment Summary

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## Performance summary and benchmarking

	Animal count	Weight (kg)	Fat	Grade	Age (mths)	Carcass gain (kg/d)	In Spec (%)
My Pure Continental	24	382	3+	R=	22.1	0.57	36
Top 10% of producers	176	384	3+	R+	21.3	0.60	58
All producers	20,458	376	3=	R+	25.8	0.49	35
Different time period	26	365	3-	R=	22.1	0.54	24



## Further examples of application

- Compare performance of breeds within herd
- Compare performance of terminal sires
- Compare performance of home grown cattle and those bought in





- Compare performance of livestock from several suppliers
- Calculate margin over feed cost for cattle slaughtered
- Assist in the selection of breeding stock
- Compare performance over different date ranges



## Key features:

- Automatically provides information to help inform breeding and management decisions – with no new data input
- Online access can be granted to consultants, veterinarians etc
- Available to all farmers
- Wide reaching and effective method of technology transfer
- Key tool to monitor industry trends and the impact of policy decisions
- Framework for genetic evaluations sire recording??



## Future developments?



Greenhouse gas calculator



**Online Growth Monitoring tool** 



Online Carcass Benchmarking Tool

Agri-Foc



DECISION SUPPORT TOOLS













## **Key Messages**

 AFBI have developed the backbone of a world class integrated livestock database

- Northern Ireland beef industry must collaborate and work together to realise the potential benefits
  - Encourage the use of online tools and industry level analysis capabilities
  - Further develop the scope of the database and embrace genetic improvement
  - Offers real opportunity to increase returns from the beef sector
- Sire recording fundamental to any future genetic improvement ambitions





