

Building an Integrative Research Framework to Deliver Profit, through Breeding, to the Agri-Food Industry – Summary of Meeting.

Background.

ICBF, Teagasc & UCD co-hosted a meeting entitled “*Building an Integrative Research Framework to Deliver Profit, through Breeding, to the Agri-Food Industry*”. The meeting took place in the Heritage Hotel, Portlaoise on Tuesday 28th April 2009. A total of 67 people attended the meeting, from a cross section of the Irish Agri-Food industry (with particular interest in Animal Breeding & Genetics). A breakdown of those attending the meeting based on particular industry segment is given in Table 1.

Table 1. A breakdown of those attending the meeting based on industry segment.

Industry Segment	People Attending
Department of Agriculture & Food	7
Irish Cattle Breeding Federation (includes staff & representatives from industry shareholders)	13
Teagasc (includes staff from research & extension centres)	29
Universities (includes staff from University College Dublin & Trinity College Dublin).	9
Wider Industry (includes staff from Animal Health Ireland, Bord Bia, IBEC, Identigen Ltd, Irish Farmers Journal & Weatherby's Ltd)	9

A list of those attending, including the agenda for the meeting is given in the attached Appendix. Copies of the presentations can be found in the publications section of the ICBF website (www.icbf.com).

Program Objectives.

The objective of the meeting was to promote greater integration within Animal Breeding Research & Development, with a view to improving the profitability of the Irish Agri-Food industry.

To help facilitate discussion, a break-out session was included in the program and a number of key questions posed to those attending. The 67 people were sub-divided to 6 groups and a facilitator appointed to each group. The key questions and “pooled” answers from the break-out sessions are given in Table 2.

Table 2. Summary of key questions & feedback from the Industry Meeting.

Question.	Key Answers.
<i>Question 1. Why should we build an integrative research framework for delivering profit through breeding to the Irish Agri-Food Industry?</i>	• To increase the profitability and sustainability of this important indigenous industry. • To increase our International competitiveness in terms of Agri-Food export. • To increase our National and International competitiveness for research funding.

	• To avoid duplication of effort/costs across research centres. • To ensure better value from existing resources. Interaction will generate new ideas and related synergies (people & laboratories). • To ensure a better collective focus for our research effort.
<i>Question 2. How should we build this integrative research framework? Suggest ideas/models for building the required framework?</i>	• The program must have clear objectives that are industry focused. • We need to establish a consortium of key stakeholders that will direct the program. • The consortium should develop a National strategy document to define objectives and deliverables. • Within this consortium, we need to identify people within each participating group (champions) that will help deliver the program objectives on behalf of the consortium. • Consortium should have wider focus than just breeding (e.g., role of nutrition, physiology & health). • DAFF have an important role in the initiative, through provision of support structures (e.g., funding & facilities). • There needs to be clear communication with all stakeholders through regular work-shop meetings, website updates etc. • There needs to be an acknowledgement amongst stakeholders that the competition is outside of Ireland (e.g., NZ & South America) as opposed to within Ireland (i.e., between research groups) • The consortium should consider joint appointments/secondments across participating groups. • A current resource audit should be undertaken to establish the extent of available resources across participating stakeholders. • Co-operation within the initiative cannot be forced. Instead we must build a framework that is attractive for all participants to work within.
<i>Question 3. How will we measure our short, medium & long-term success?</i>	<i>General measures of Success.</i> • Industry uptake and profitability (including phenotypic and genetic trends). • Critical mass (knowledge & IP) within the research group and wider industry. <i>Specific - Short-term (1-2 years)</i> • Clear action from today. We must look to start immediately. Set up the group, define the objectives & establish key

	deliverables. • Establish some measures of short-term success; • % of new projects from the collaborative group, • Number of peer reviewed journals (from the group) • Number of high calibre PhD students (within the group). • Initial industry uptake to new measures/approaches. <i>Specific - Medium-term (3-5 years).</i> • The building of knowledge & IP at research level. • The quality of people being attracted to the initiative & the quality of people being retained within the initiative. • The ability for the initiative to attract outside/industry funding. • The number of technology companies “spinning out” from the initiative. <i>Specific - Long-term (6+ years).</i> • Econometric trends; profitability, genetic & phenotypic trends. • Impact on international competitiveness. • Ability to leverage international funding. • The building of knowledge & IP at wider industry level. • Critical mass within the industry
<i>Question 4. Based on the 3 talks presented (from ICBF, Teagasc & UCD), how complete is the desired framework for fertility traits? Are there improvements to the working model? Can you identify some specific actions out of today?</i>	• We don’t currently have an integrated framework for fertility. • Need more work linking genomics (genetic evaluations for fertility) & underlying genes for fertility (through genome wide association studies). • There should be a more integrated approach across genetics, physiology & breeding. For example, in the future, research models should use information from animals that have all 3 pieces of information. • Need better communication & interaction on how to record fertility phenotypes (which traits, recorded when & where?). • We need to have a periodic user forum to provide input into research program (commodity groups). For example, new fertility research should concentrate on 2 areas; (i) Exploiting ‘omic technologies, and (ii) Increasing AI usage. • We should consider industry incentives to promote “best practice in breeding” (e.g., the success of the Suckler Cow Welfare Scheme in beef cattle). • We need to improve transfer technology at farm level.

Key Outcomes from the Meeting.

Based on excellent feed-back and discussion, particularly from the working groups, a number of key outcomes were identified from the day. These included;

- The Irish-Agri Food industry is well positioned to deliver on the potential of new ‘omic technologies in animal breeding. This is due primarily to 2 key reasons;
 - *Critical mass of people and resources*; Teagasc, the universities and ICBF have and are continuing to develop the key people and the resources required for effective delivery of the new ‘omic technologies. (i.e., more accurate phenotypes, genetic/genomic evaluations, genotyping capabilities, specific gene effects/genome wide association studies & breeding programs).
 - *An infrastructure for delivery*. As a result of the establishment of ICBF & the new Animal Health Ireland, the Irish Agri-Food Industry is now much better structured to; (i) identify the priorities and (ii) deliver the benefits of improved research and development in animal breeding (& related disciplines), to the industry.
- The “Genomics Story” is an excellent template of how key industry groups (Teagasc, ICBF and Universities) can come together to deliver real benefits to the Agri-Food industry (€0.5 million spent to return €8 million/annum gains).
- A consortium of key stakeholders should be put in place to establish a “new frame-work” for animal breeding research, involving ICBF (& the wider industry), Teagasc and Universities. The consortium should then look to develop a National strategy document, identifying key objectives and deliverables for the new program. The scope of this work could extend beyond animal breeding to consider all aspects of animal science.
- Measures of success should be identified that are focused on; (i) industry uptake and profitability and (ii) critical mass (knowledge & IP) at research & industry level.
- On the specifics of fertility, a working group should be put in place from the industry stakeholders, to evaluate current and future opportunities for more integrated research in the area of fertility. Identifying the underlying chromosomal regions influencing fertility should be a priority of that working group.

Andrew Cromie, ICBF
Donagh Berry, TEAGASC
Alan Fahy, UCD

30th April 2009

Appendix 1. Workshop Participants.

First Name	Last Name	Company
Mike	Magan	Animal Health Ireland
Joe	O'Flaherty	Animal Health Ireland
Gerard	Brickley	Bord Bia - Irish Food Board
John	O'Sullivan	ICBF Board
Helen	McCann	Department of Agriculture & Food
Ignatius	Byrne	Department of Agriculture & Food
John	Carty	Department of Agriculture & Food
Deirdre	Corcoran	Department of Agriculture & Food
Dale	Crammond	Department of Agriculture & Food
Ciara	Daly	Department of Agriculture & Food
Cormac	Healy	IBEC
Dermot	Cahill	ICBF Board & Dovea AI
Doreen	Corridan	ICBF Board & Pedigree Cattle Breeders
Kevin	Meade	ICBF Board & Progressive Genetics
Pat	Mulvehill	ICBF Board & Munster AI
Richard	Whelan	ICBF Board & IHFA
Ciaran	Meghan	Identigen Ltd
Ronan	Loftus	Identigen Ltd
Ross	Evans	ICBF Staff
Francis	Kearney	ICBF Staff
Brian	Wickham	ICBF Staff
Andrew	Cromie	ICBF Staff
Matt	Dempsey	Irish Farmers Journal
Jack	Kennedy	Irish Farmers Journal
Charles	Gallagher	ICBF Shareholders & IHFA
Bernard	Eivers	ICBF Board & NCBC
Dan	Bradley	Smurfit Institute of Genetics
Donagh	Berry	Teagasc - Research
Gerry	Boyle	Teagasc - Research
Frank	Buckley	Teagasc - Research
Stephen	Butler	Teagasc - Research
Chris	Creevey	Teagasc - Research
Richard	Dewhurst	Teagasc - Research
Pat	Dillon	Teagasc - Research
Michael	Diskin	Teagasc - Research
John	Donworth	Teagasc - Advisory
Bernadette	Earley	Teagasc - Research
Linda	Giblin	Teagasc - Research
Dawn	Howard	Teagasc - Research
Gerry	Keane	Teagasc - Research
Pearse	Kelly	Teagasc - Advisory
Mark	McGee	Teagasc
Sinead	McParland	Teagasc
Dermot	Morris	Teagasc
Mike	Mullen	Teagasc
Anne-Marie	Mullen	Teagasc
Frank	OMara	Teagasc
Eddie	O'Riordan	Teagasc
George	Ramsbottom	Teagasc - Advisory
John	Donworth	Teagasc - Advisory
Paul	Ross	Teagasc

Appendix 1. Workshop Participants.

Ríona	Sayers	Teagasc
Ruth	Hamill	Teagasc
Michael	Doran	Teagasc Beef Stakeholder Group
Noreen	Begley	Teagasc Moorepark
Seamus	Hanrahan	Teagasc Research Centre
Liam	Fitzgerald	Teagasc, Athenry
Michael	O'Driscoll	Teagasc, Athenry
Patrick	Cunningham	Trinity College
Emma	Finlay	Trinity College
Maurice	Boland	UCD
Frank	Crosby	UCD
Alex	Evans	UCD
Alan	Fahey	UCD
David	MacHugh	UCD
Simon	More	UCD
Pat	Loneragan	UCD
John	Flynn	Weatherbys Ireland Limited

**Building an Integrative Research Framework to Deliver Profit, through Breeding,
to the Agri-Food Industry**

Venue: The Heritage Hotel, Portlaoise
Date and Time: Tuesday 28th April; 9:00 – 16:00

**Session 1. Ireland's capacity to be world leaders - Chair: Prof. Gerry Boyle
(Teagasc)**

9:00 Opening of workshop – Prof. Gerry Boyle (Teagasc)
9:10 What does the Agri-Food industry want from research – Mike Magan
9:25 Animal Breeding in Ireland to date – Dr. Brian Wickham (ICBF)
9:40 Teagasc's resources and short-term plans – Dr. Sinead Waters (Teagasc)
9:55 UCD's resources and short-term plans – Prof. Maurice Boland (UCD)
10:10 TCD's resources and short-term plans – Prof. Dan Bradley (TCD)
10:25 Discussion
10:35 Coffee / tea

**Session 2. What new technologies have to offer Animal Breeding in Ireland - Chair:
Prof. Paddy Cunningham (Chief Scientific Advisor to the Government)**

11:15 Moore's Law, Genomics and the Future of Animal Breeding. – Prof. David MacHugh (UCD) & Dr. Chris Creevey (SFI Stokes lecturer, Teagasc)
11:35 Genomic Selection; From Innovation to Application – Dr. Donagh Berry (Teagasc) & Dr. Francis Kearney (ICBF)
12.00. Discussion

Session 3. Fertility; Work in Progress. Chair: Dr. Jack Kennedy (Irish Farmers Journal).

12:15 Fertility – where we currently stand
– ICBF (Dr. Andrew Cromie), UCD (Prof. Alex Evans), Teagasc (Dr. Stephen Butler) each given 10 minutes to lay out their resources and immediate plans as well as discussion openers
12:45 Group break-out
13:00 Lunch
13:45 Group break-out.
14.30 Discussion on group breakout

Session 4. Emerging Traits of economic Importance; Animal Health & Feed Efficiency– Chair: John O'Sullivan (Chairman of ICBF)

15:15 Animal Health – Prof. Simon More (CVERA, UCD) – Discussion opener
15:25 Feed Efficiency – Dr. Frank O'Mara (Teagasc) - Discussion opener
15:40 Discussion.

15:50 Summary and conclusions – Matt Dempsey (Irish Farmers Journal)