ICAR 2012 Conference
Cork, Ireland

Integrating milk recording and disease test results to provide a system for managing Paratuberculosis (Johne's disease) in UK dairy herds

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2. The UK approach
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Johne's: A complex challenge....

- Long incubation period
- No cure
- Present in the environment
- Costs are hidden – few clinical cases

Johne's: A complex challenge....

....that needs to be addressed

1. **Impact on Herd Performance**

Economics

Findings of a study of 120 Johne's positive and 120 Johne's negative cows:

- Give 4000kg less milk over lifetime
- Milk production reduces in second lactation
- 5X more likely to be lame
- 2X more likely to develop mastitis/ SCC problems
- 1.8 times more likely to suffer digestive/ respiratory disease

Production effects of MAP in dairy cows. Proceedings of International Johne's conference 2005. Villarano MA and Jordan ER

Johne's: A complex challenge....

....that needs to be addressed

1. Impact on Herd Performance

2. Potential association with Chrone's disease in humans

3. New cost effective approaches for control

UK approach

- Voluntary
- No government support – need to demonstrate commercial benefits from control
- Quarterly ELISA testing using milk recording samples to establish disease status reliably
- Management of cows based on risk
  - Risk of entry
  - Risk of spread
- Vet engagement

HerdWise classification

Risk Level	HerdWise Classification	Johne's Infection Group	Definition
LOW	Green	J0	Repeat ELISA negative (minimum 2 tests)
	Green	J1	ELISA negative but only one test
	Green	J2	ELISA negative but positive within 3 previous tests
HIGH	Yellow	J3	ELISA negative/positive interchangeably
	Yellow	J4	Last ELISA positive, all previous tests negative
	Red	J5	Repeat ELISA positive (minimum 2 tests)

NMR information partnerships

HerdWise Reports

- Individual cows classified as red, amber or green based on an assessment of consecutive test results
- Presented online to vet and farmer
- Graphs illustrate trends

MANAGEMENT REPORT - LOW RISK COWS

MANAGEMENT REPORT - HIGH RISK COWS

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Producer Details	NMR Herd Number	Scheme Commencement Date	Number of High Risk Cows Present At Last Test	Page 1 of 2
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Results based on cows sampled on: (Only valid up to 4 months from specified sample date)

Line No.	Ear Tag	ELISA 17/02/2010	ELISA 19/05/2010	Days in Milk*	Milk Yield (kg)*	Parity	Milk Yield Drop	Predicted Calving Date	Infection Group on 19/05/2010	
56	1886	129.31	--	552	6.00	2	Very Likely	10/07/2010	J5	!
93	1931	137.62	131.33	196	28.30	2	Very Likely	20/10/2010	J5	!
136	2267	37.18	34.01	224	22.20	2	Very Likely	13/11/2010	J5	!
239	0494	39.82	69.36	317	23.00	2	Very Likely	14/09/2010	J5	!
284	2112	33.03	54.19	257	23.10	2	Very Likely		J5	!
423	1974	40.92	95.75	206	29.00	2	Very Likely		J5	!
1	1398	3.94	38.43	237	25.90	4	Likely	05/10/2010	J4	?
204	1731	16.88	52.73	294	20.70	3	Likely		J4	?
355	2115	0.43	40.11	236	27.80	2	Likely	02/10/2010	J4	?
408	2076	--	--	624	8.30	1	Likely		J4	?
7	2447	10.45	3.65	305	22.70	1	Possible		J3	?

'RED' cows (High-risk cows) potentially culled prior to next calving (start with cows with high values).
NO COLOSTRUM/MILK USED FOR CALVES

'YELLOW' cows (High-risk cows) require good hygiene around calving. Cull only if few high-risk cows.
NO COLOSTRUM/MILK USED FOR CALVES

VET COMMENTS:

date)

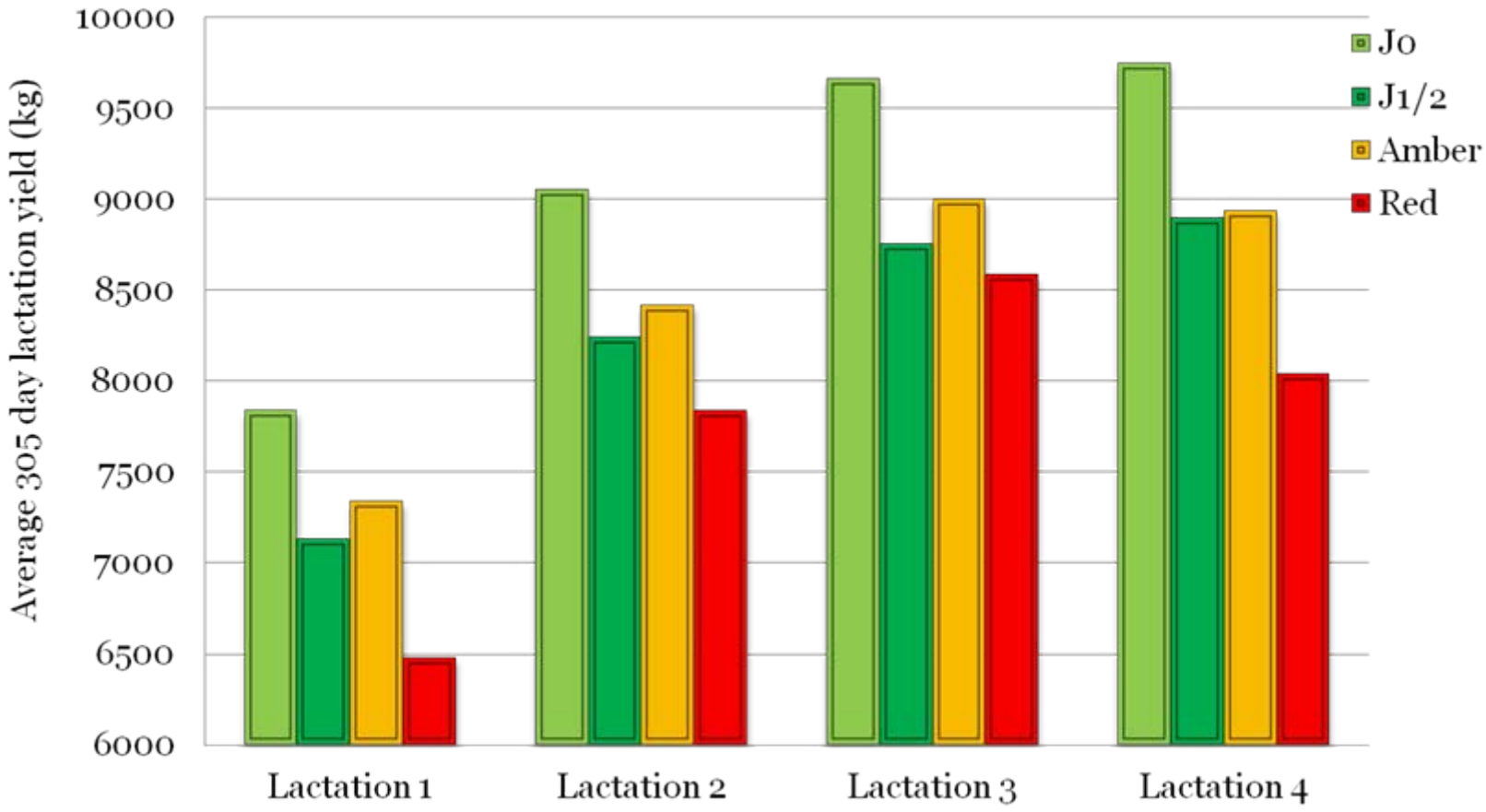
ction Group 19/05/2010

g cows)

CATTLE HEALTH CHeCS CERTIFICATION STANDARDS

NMR information partnerships

Average 305 day lactation yield for high, medium and low risk cows



Cell count comparison

449 total herd

Cell count	cf. self	Days PP	Peak yield (kg)	Yield to 3rd date	Predicted 305-days (kg)	No. SCC high
35	21%	182	45.4	6,761	11,589	1
21	-25%	173	32.0	4,606	6,444	1
27	0%	24	47.0	982	11,265	0
14	-10%	155	43.8	5,430	9,458	0
19	6%	177	32.6	4,982	7,773	0
21	11%	118	48.0	4,883	11,164	0
10	6%	144	39.2	4,104	8,247	0
25	6%	191	33.3	5,809	8,906	0
48	-30%	307	32.4	8,092	8,057	1
88	7%	311	44.0	11,116	10,924	1
78	-2%	154	33.5	4,693	7,997	1
129	0%	4	14.6	52	5,888	0
59	6%	150	36.7	5,030	9,817	0
12	7%	141	35.4	4,146	8,653	0
79	13%	301	37.8	9,349	9,460	0
114	-4%	135	31.2	3,721	7,087	1
270	-10%	146	28.1	3,284	5,802	1
21	10%	189	27.8	4,863	7,239	0
114	-26%	282	35.6	8,509	8,671	5
45	0%	130	30.2	3,451	7,693	1
15	9%	192	33.5	5,453	8,406	0
33	1%	168	34.1	5,129	7,993	0
61	-3%	128	33.6	4,056	8,830	0
62	8%	196	37.3	6,388	9,683	2
34	1%	178	36.6	5,748	9,270	0
125	-7%	183	37.9	6,195	9,420	0
6	7%	195	36.8	6,478	9,832	0
114	4%	177	30.7	5,022	7,882	0
56	3%	137	37.1	4,271	8,987	0
63	6%	159	31.1	4,428	8,019	1
18	6%	155	28.1	3,804	7,226	0
30	13%	180	31.2	4,936	8,301	0
30	4%	189	29.1	5,019	7,763	0
26	7%	174	38.5	6,055	10,152	0
155	5%	174	41.7	5,957	9,757	
				1,674,539	4,380,872	

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47 test positive

Cell count	cf. self	Days PP	Peak yield (kg)	Yield to 3rd date	Predicted 305-days (kg)	No. SCC high
34	1%	178	36.6	5,748	9,270	0
11	0%	23	35.6	712	8,575	0
196	15%	380	53.7	9,668	9,654	7
1063	-41%	188	26.6	4,095	4,778	6
1393	-9%	184	46.5	7,852	10,864	5
154	17%	274	45.0	10,547	11,458	0
1799	4%	53	50.3	2,265	11,376	2
102	35%	153	47.7	5,656	11,034	2
105	0%	174	40.5	6,441	9,757	0
133	0%	10	41.8	361	11,439	0
123	-34%	159	42.1	5,175	7,179	0
216	4%	194	55.2	8,802	12,345	1
126	-2%	43	50.8	1,978	11,683	0
207	-39%	360	42.6	9,074	8,511	9
	0%	92	29.5	2,429	6,620	1
181	-15%	167	44.3	5,673	8,396	2
64	-11%	189	44.3	7,357	10,032	0
254	-2%	530	50.3	20,336	13,668	8
193	-8%	100	47.3	4,169	9,702	1
33	26%	216	52.5	9,879	12,739	0
12	26%	84	40.1	2,356	8,680	0
208	2%	182	45.0	6,939	10,161	2
66	13%	150	53.4	7,384	13,485	0
10	7%	107	44.5	4,353	10,716	0
22	2%	97	49.9	4,595	11,962	0
1634	-14%	182	40.9	5,774	7,989	1
180	13%	183	41.4	6,730	10,218	0
192	-18%	308	40.1	8,360	8,304	6
9321	-1%	54	36.4	1,801	8,361	2
71	-5%	70	45.1	2,816	9,748	0
85	23%	132	37.7	4,087	8,206	0
112	10%	222	39.6	7,503	9,697	1
47	12%	146	40.4	4,963	9,463	0
124	-26%	372	45.7	13,075	11,251	1
423	3%	175	43.0	6,035	9,775	
				295,725	478,957	

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Source: West Ridge Vet Practice

Progress so far.....

- Training for 360 vets over last 3 years
- 3000 farmers trained over last 18 months
- Engagement of stakeholders through the supply chain (farmer bodies, vet association, dairy processors, regional agencies)
- 1,200 herds on surveillance scheme
- Positive feedback from early adopters

Progress so far...
Keys to farmer engagement

- Clear presentation of data
  - Easy identification of high risk cows
  - Highlight cows where management decision needed
- Vet support
  - Link to vet management systems
- Framework for control
  - Strengthen chances of success

Outlook

- Continued analysis of economic impact of Johne's
- Strengthen farmer and vet understanding of biosecurity and biocontainment risks
- Demonstrate best practice in Johne's control
- Provide the framework and tools to aid development of effective control plans

The complete assessment of Johne's status and control

Concluding thoughts

The improved understanding of the technical impact of Johne's and the ease of ELISA testing using milk recording samples has stimulated UK industry engagement in Johne's control

BUT

Many challenges still lie ahead

- Maintaining existing engagement with Johne's control
- Engaging with those who have yet to start

COMMITMENT.....CO-ORDINATION.....COMMUNICATION

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Thank you

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