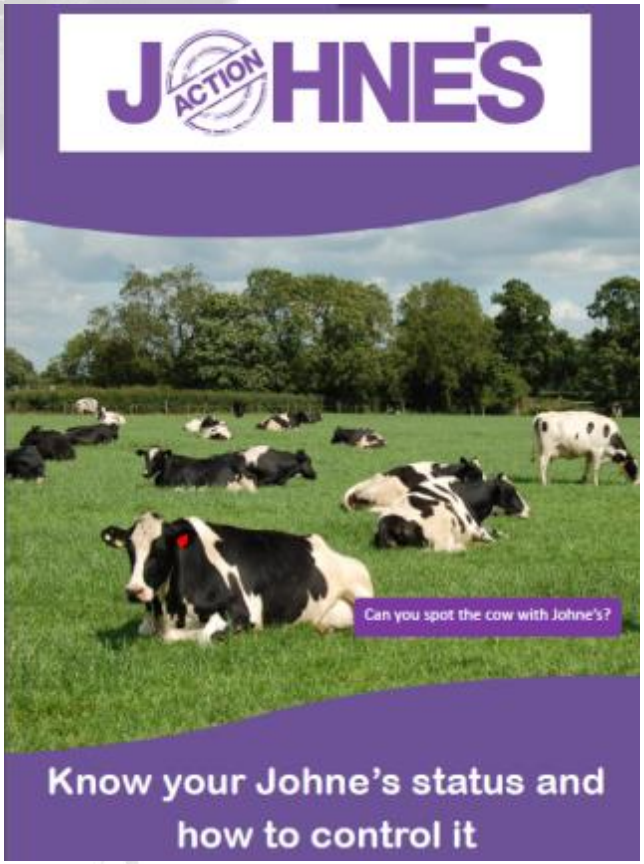
Johnes Disease
Control in the Dairy Cow



JOHNE'S ACTION

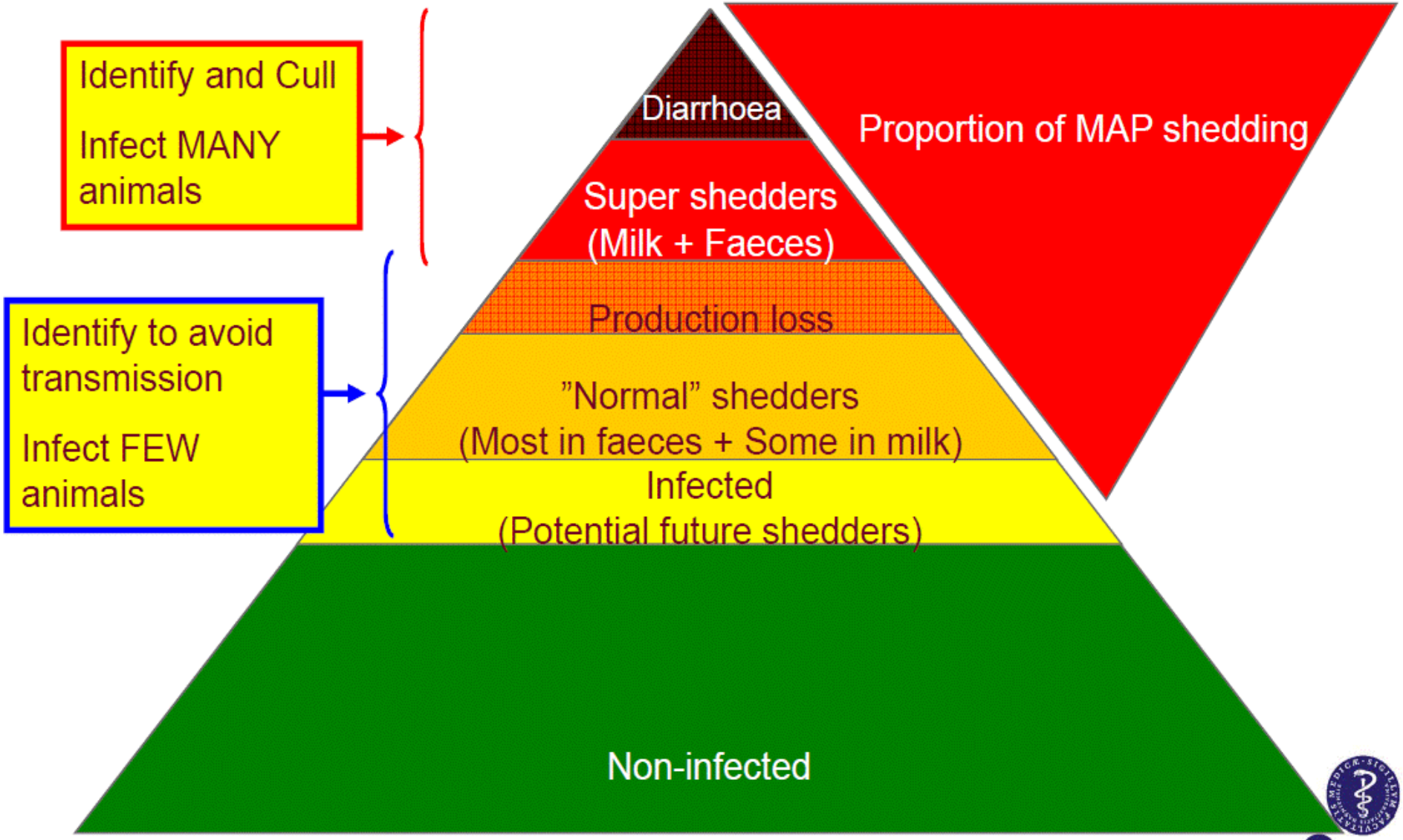
How Common is Johne's Disease in the UK?

- VLA, SAC, AFBNI survey on 120 farms in 2006
  - 65% of herds had 1+ positives
  - 37% of all herds surveyed knew they had the disease already
- NML internal analysis of over 900 30-cow screens in 2011 found one or more positive result in 68.9%
  - Other data also suggests the disease situation has got worse

The Iceberg Concept

- For every animal that develops clinical signs
  - there will be 7 to 10 animals shedding the infectious agent
  - there will be more animals in the silent period of infection
- In heavily infected herds around 25% of animals are faecal culture positive
- No more than half or a third of infected animals will be detected by lab tests on a single occasion.

The Iceberg Concept

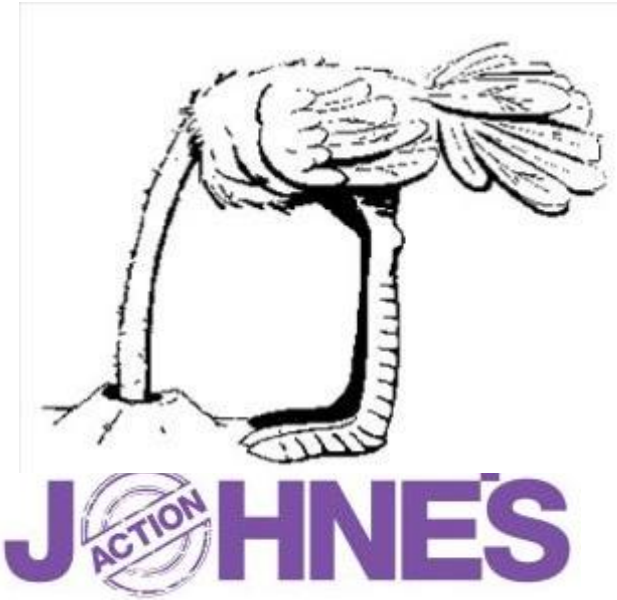


Clinical signs may be rare in well managed herds as cows are often culled prior to symptoms being seen

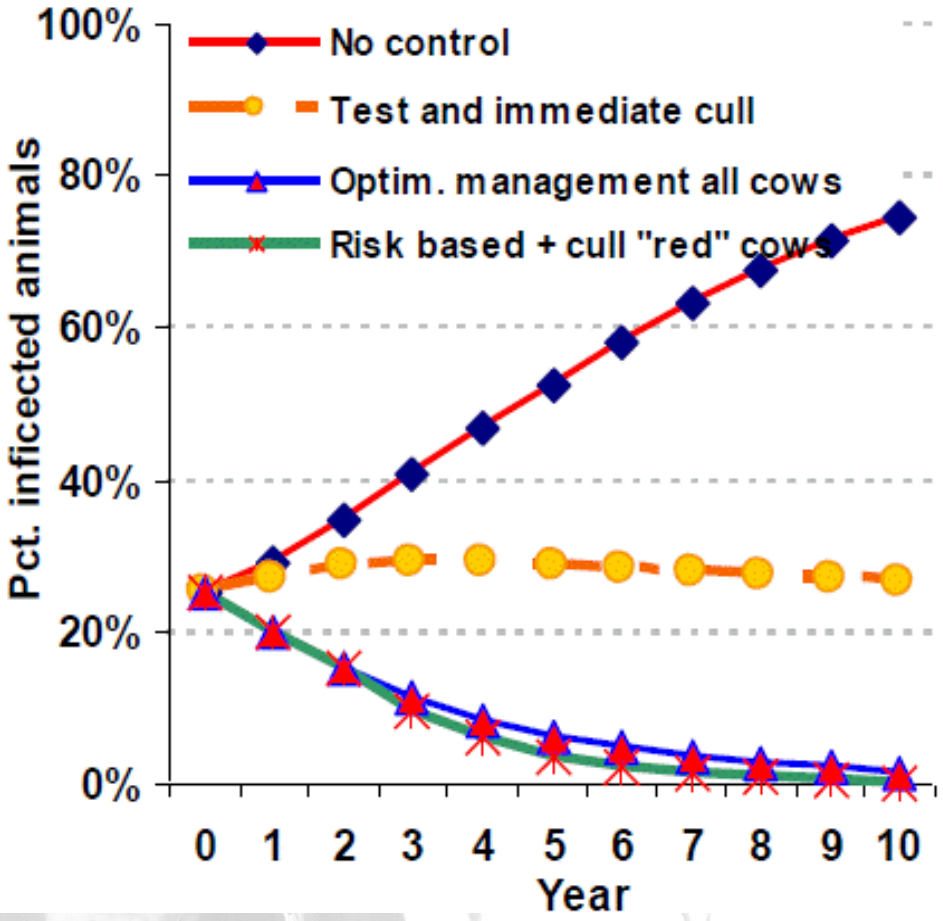
Why Control?

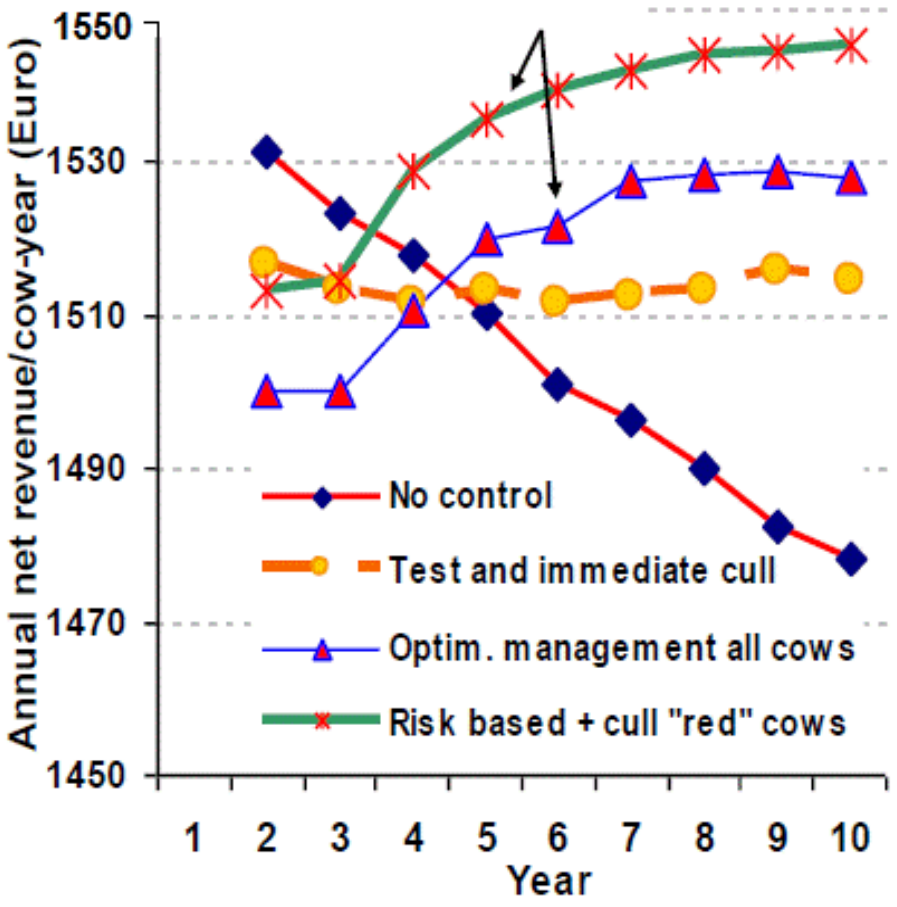
- Annual incidence of mastitis around 65/cases/100 cows/year
- Lameness prevalence ?? 20%
- Conception rate 37% and falling,
- Cull rates ……..

“We’ve got enough problems …….Why Bother?”



Is there a Cost Benefit?





Inaction in the long term will cost more than action!

JOHNE'S ACTION

Develop a farm plan with your vet

Select the most appropriate strategy for farm by assessing factors such as:

- Current **Prevalence** of Johne's on the farm
- **Biosecurity** risk associated with the farm (e.g. buying in of stock)
- **Bio-containment** risk associated with the farm (e.g. risk of spread within the holding)
- **Resources** (capital and human)
- **Aspiration** (eg desire to eliminate Johne's completely or simply contain the disease at manageable levels)

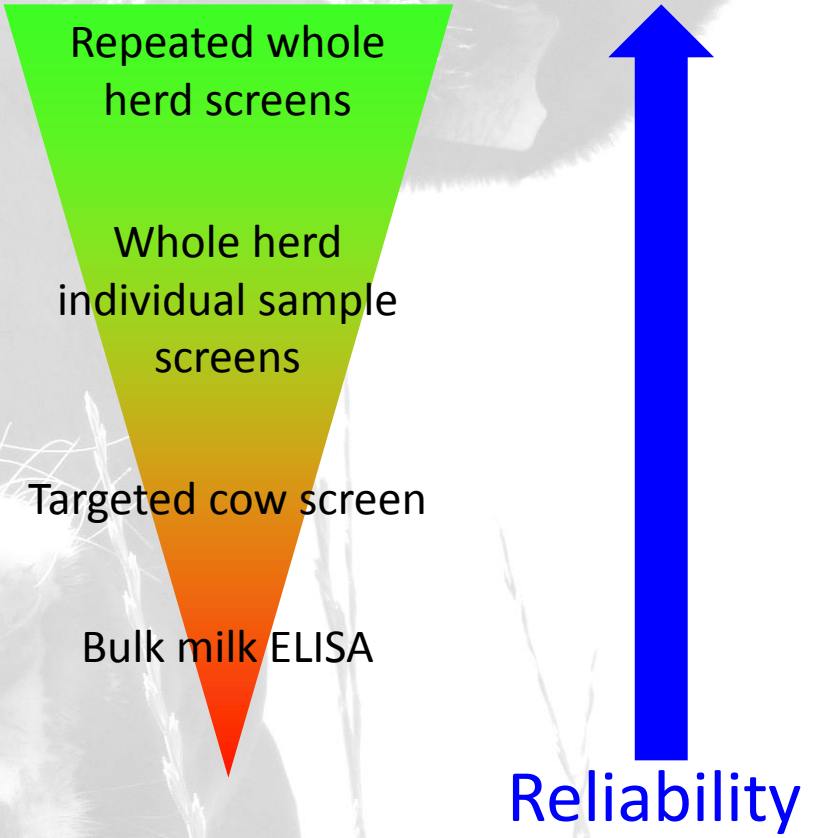
JOHNE'S ACTION

Know Your Johne's Disease Status

Establish a base status of the herd

1. A herd-level test to provide an indication of prevalence
2. An assessment of the risk of entry of the disease (Biosecurity)
3. An assessment of the risk of spread of the disease (Biocontainment)

Know Your Johne's Disease Status



Johne's disease is complex and not always easy to detect

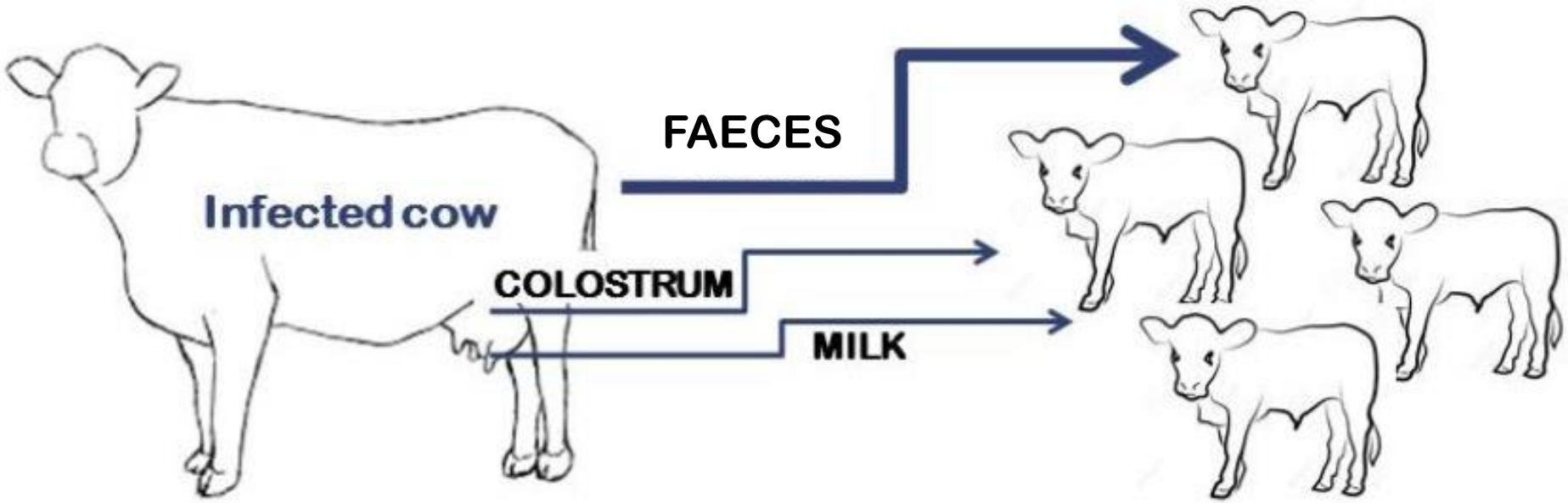
The more samples you take, the more reliable the results

Question 1

What do you think is the most important source of transmission of infection of Johnes in the herd?

- Faecal contaminated material
- Trans-placental during pregnancy
- Bacteria excreted directly in the milk and colostrum
- Aerosol route

Breaking the Johne's cycle is Key



Johne's infection is mainly caused by calves ingesting faeces from contaminated bedding, udders, teats or on dirty buckets of colostrum or milk. Much less commonly the disease can be acquired in the womb or later in life.

80% of Johne's infections occur within the first month of life

JOHNE'S ACTION

1. Biosecurity Protect and Monitor

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6. Firebreak vaccination

National Johne's Management Plan:

6 strategies for Johne's Disease control

JOHNE'S ACTION

1. Biosecurity Protect and Monitor

- For herds who have completed appropriate screening and have no evidence of disease

  1. A plan to protect the herd from disease entry
  2. Monitor through appropriate screening tests

     e.g. repeated cow screens / whole herd screens

Buyer Beware (Testing)

2. Improved Farm Management

- Works by reducing the risk of spread to calves using husbandry measures alone
- Requires dedication and labour

JOHNE'S ACTION

2. Improved Farm Management

- Prevent ingestion of faeces by all animals
  - Particularly the young ones
  - Keep faeces out of feed
- Do this by:
  - Colostrum /milk management
  - Calf management
  - Cleaning and disinfection
- Calving pen
  - Clean and dry
- Separating cows from calves

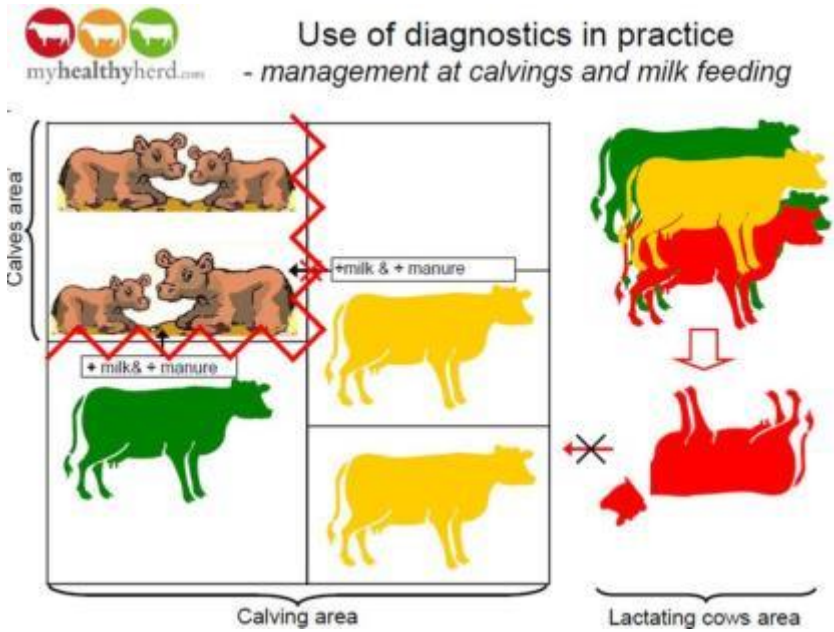
Question 2

What form of testing have you performed within the herd in the last year?

- None
- Bulk Milk
- 30 cow screen
- Cull cow testing
- Whole herd testing via milk /blood

3. Improved Farm Management, risk assessment and strategic testing

- Using a testing program in conjunction with IFM will help identify heavy shedding or infectious cows
- Removing high risk cows allows IFM to work better
- Use Risk Based Planning
- For Example, test positive cattle are not allowed to enter the maternity areas



JOHNE'S ACTION

4. Improved Farm Management, Test and cull

- Suitable for low prevalence herds wanting to quickly remove infected animals from the herd BEFORE they get chance to spread Johne's
- Work with your vet to adopt a biocontainment & IFM policy in addition to solely culling test positives
- May be high cost of control with slow progress without IFM…

Risk Based Control With Regular Testing

Advantages

- Hassle free testing through milk recorded sample / blood testing
- Regular monitoring allowing more accurate timely culling
- Ability to manage 90% of the herd normally

Disadvantages

- Requires milk recording or regular bleeding
- There is no “gold standard” test available, so false positives / negatives may be culled
- Need to mark and identify test positive cattle and calve in isolation from main herd

5. Breed to a terminal sire

- In herds where the level of infection means there is a high risk of transmission to youngstock but barriers to adopting other strategies
- If infection levels high in home bred replacements, do purchased animals represent a lower risk?
- Purchase replacements from lower risk herds
- Breed all cows to terminal sire until infection controlled

6. Firebreak vaccination

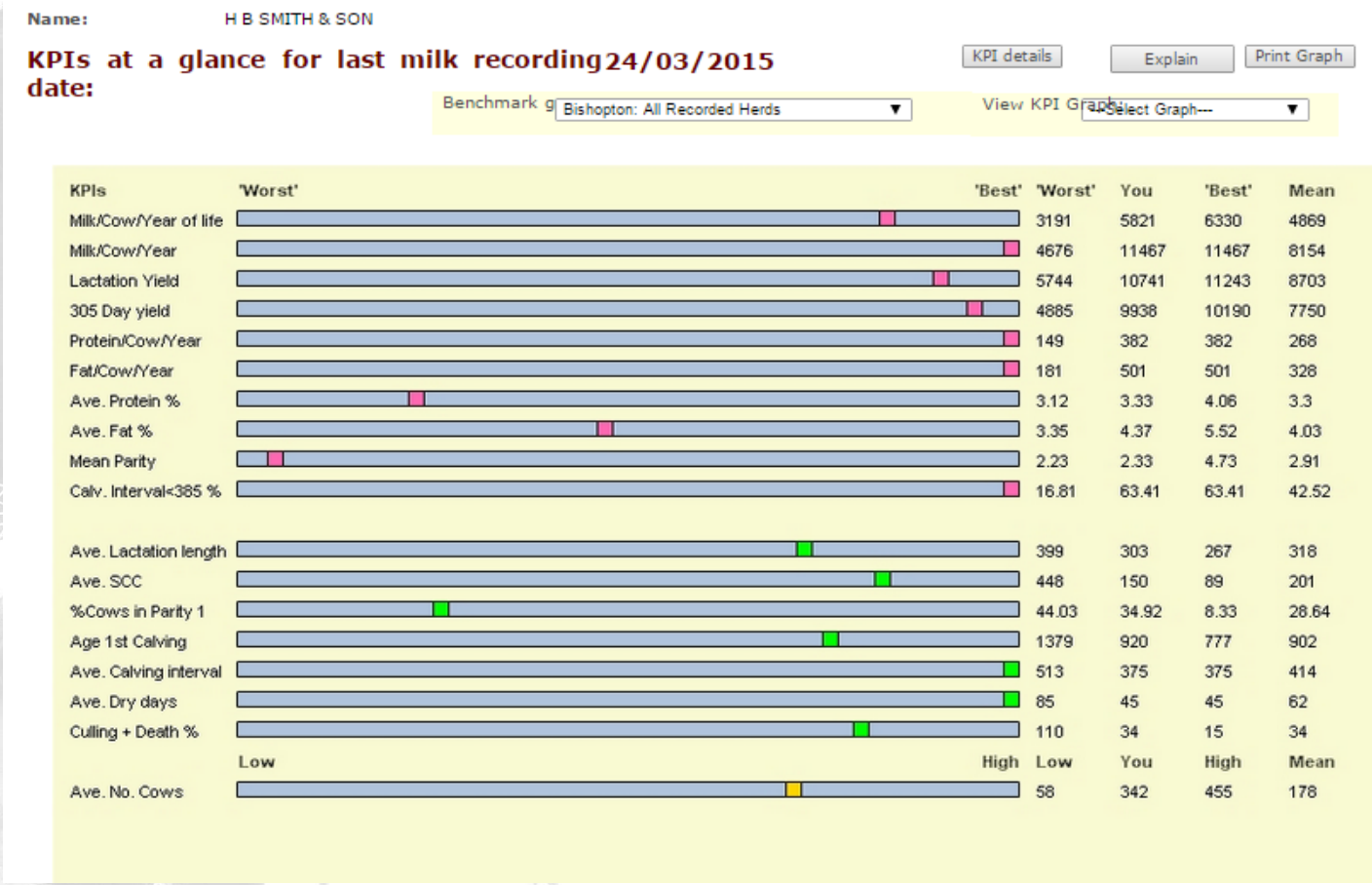
- A short term option for high risk or high prevalence herds to buy some time
- Delays the onset of clinical signs but does not eliminate excretion of MAP
- Vaccinated animals will test positive
  - May make selling animals more difficult
  - Makes interpretation of tests difficult
- Cross reacts with bTB test and increases possibility of false positive bTB reactors
- Vaccinated stock should be viewed as infected rather than free of disease; what is next step?

Control

- Has to be a team approach.
- All staff need to know polices and understand importance
- Educate
- Revisit – don't assume it's all working fine

Case Study 1
Crosby Grange Farm

Herd Performance



High Milk Production

Name: H B SMITH & SON

Milk per cow per year

Benchmark g: Bishopton: All Recorded Herds

View KPI Graph: Milk/Cow/Year

No Years: 5 | Min Y-axis: 5000 | Max Y-axis: 11000 | Change | Explain | View Data | Print Graph

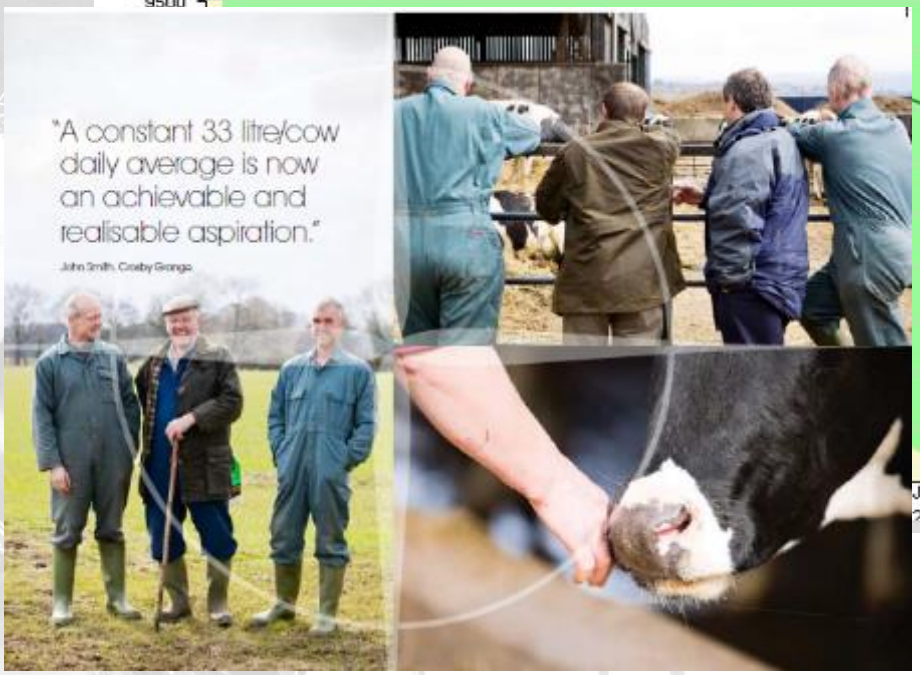
Period from: 23/04/2010 to 23/04/2015

BMG Mean

Milk/Cow/Year

11000
10500
10000
9500

J M M N J M M J S N J M
2013 2014 2015



JOHNE'S ACTION

Herd Performance

Culling at 34%

Name: H B SMITH & SON

KPIs at a glance for last milk recording date: 24/03/2015

KPI details

Benchmark g Bishopton: All Recorded Herds ▼ View KPI Graph: ---Select Graph--- ▼

	'Best'	'Worst'	You	'Best'	Mean
		3191	5821	6330	4869
		4676	11467	11467	8154
		5744	10741	11243	8703
		4685	9938	10190	7750
		149	382	382	268
		181	501	501	328
		3.12	3.33	4.06	3.3
		3.35	4.37	5.52	4.03
		2.23	2.33	4.73	2.91
		16.81	63.41	63.41	42.52
Ave. Lactation length		399	303	267	318
Ave. SCC		448	150	89	201
%Cows in Parity 1		44.03	34.92	8.33	28.64
Age 1st Calving		1379	920	777	902
Ave. Calving interval		513	375	375	414
Ave. Dry days		85	45	45	62
Culling + Death %		110	34	15	34
	Low	High	Low	You	High	Mean
Ave. No. Cows			58	342	455	178

1.Eliminate the source of Infection

Herd Monitoring

Line No.	Ear Tag	ELISA 24/03/2015	ELISA 22/06/2015	Days in Milk*	Milk Yield (kg)*	Parity	Milk Yield Drop	Predicted Calving Date	Infection Group on 22/06/2015	
921	123524701921	87.03	97.25	125	42.10	5	Very Likely		J5	!
992	123524101992	40.99	55.96	269	12.30	4	Very Likely	08/08/2015	J5	!
2054	123524702054	51.75	--	455	13.00	4	Very Likely	29/06/2015	J5	!
2210	123524202210	--	128.95	80	32.40	4	Very Likely		J5	!
2275	123524402275	48.77	61.67	188	41.50	4	Very Likely	11/02/2016	J5	!
2352	123524402352	29.05	35.26	302	26.60	3	Very Likely	21/09/2015	J5	!
2702	123524402702	29.73	30.81	134	40.00	3	Very Likely		J5	!
2704	123524602704	75.88	23.18	50	43.50	3	Very Likely	20/03/2016	J5	!
2929	123524702929	76.84	109.84	306	25.20	1	Very Likely	02/11/2015	J5	!
2951	123524102951	--	81.92	77	14.50	2	Very Likely		J5	!
3029	123524203029	91.17	109.79	252	30.30	1	Very Likely	07/12/2015	J5	!

'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

HerdWise
Manage disease. Protect your future.

NML
national milk laboratories

JOHNE'S ACTION

Management Decisions

Calving time

Line No.	Ear Tag	ELISA 24/03/2015	ELISA 22/06/2015	Days in Milk*	Milk Yield (kg)*	Parity	Milk Yield Drop	Predicted Calving Date	Infection Group on 22/06/2015	
3058	123524303058	44.59	43.30	274	22.60	1	Very Likely	04/09/2015	J5	!
3102	123524503102	111.35	125.32	258	23.00	1	Very Likely	21/09/2015	J5	!
3119	123524103119	74.19	80.53	204	28.00	1	Very Likely	04/01/2016	J5	!
3159	123524603159	83.23	95.64	249	33.90	1	Very Likely	16/10/2015	J5	!
2000	123524202000	36.19	--	291	25.10	4	Likely	18/07/2015	J4	?
2038	123524502038	--	51.86	81	52.30	5	Likely	05/03/2016	J4	?
2111	123524102111	7.91	30.19	539	27.40	3	Likely		J4	?
2278	123524702278	17.77	41.08	262	26.70	4	Likely	16/08/2015	J4	?
2429	123524402429	42.76	--	447	10.90	3	Likely	05/08/2015	J4	?
2642	123524702642	21.38	34.11	314	17.50	2	Likely	07/08/2015	J4	?
2833	123524202833	3.32	52.96	298	31.10	2	Likely	27/09/2015	J4	?

'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

myhealthyherd.com®

JOHNE'S ACTION

Good Fertility
Homebred Replacements

2.Prevent New Infections

Protecting Calves

Separate calving/maternity area for low vs high risk cows

Hygienic colostrum management

JOHNE'S ACTION

Case Study 2
Chalk Lodge

JOHNE'S ACTION

Johne's disease history -before 2014

- Restocked 2001 post FMD
- 3 main herds bought
- Started seeing clinical cases 2004
- Incidence increased to 1 per month
- Commercial herd increasing size to 680+ (2015)
- 2008 - Opportunity to bleed whole herd as part of an SAC BVD study
- Joined PCHS 2010
- Paraban Champion Farm

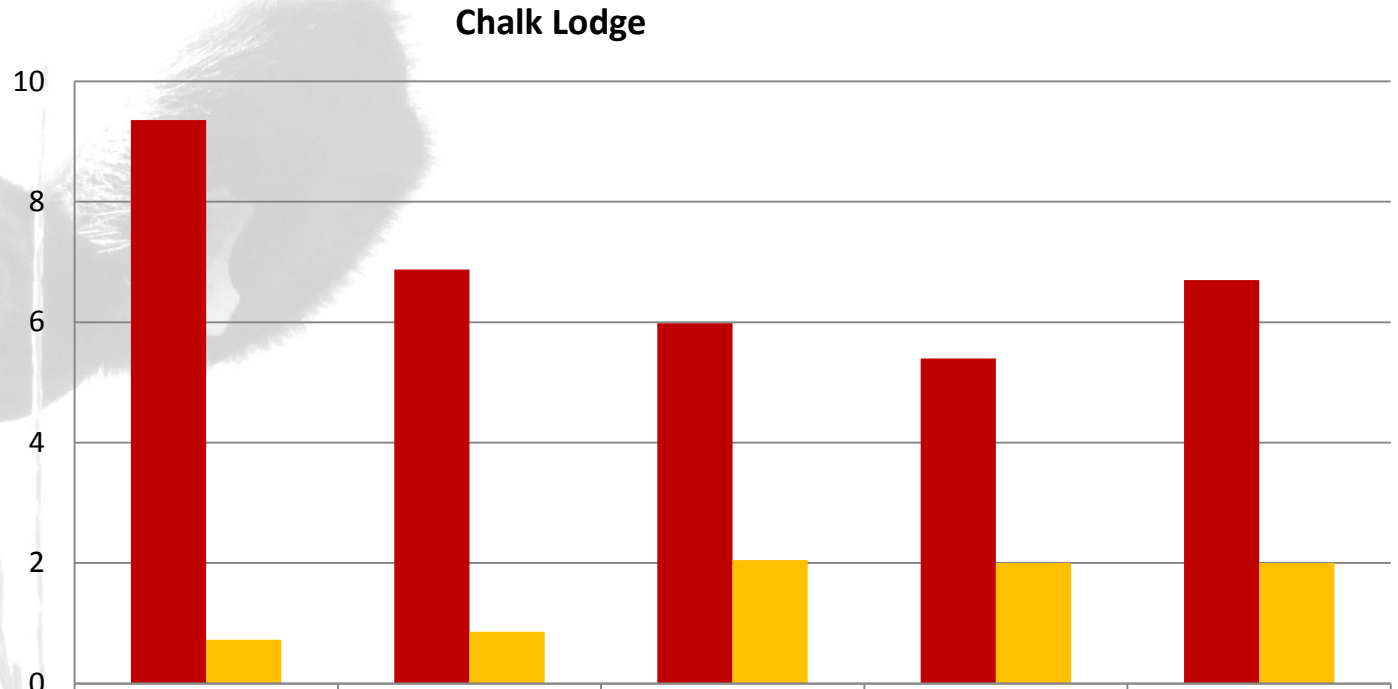
Cows Bled Annually since 2008 and Identified

JOHNE'S ACTION

New Calf Shed and Pasteuriser – 2009

New calving pens built - 2011

Whole herd blood test results



	Feb 10	Mar 11	Mar 12	Mar 13	Mar 14
% Positive	9.4	6.9	6.0	5.4	6.7
% Non conclusive	0.7	0.9	2.1	2.0	2.0

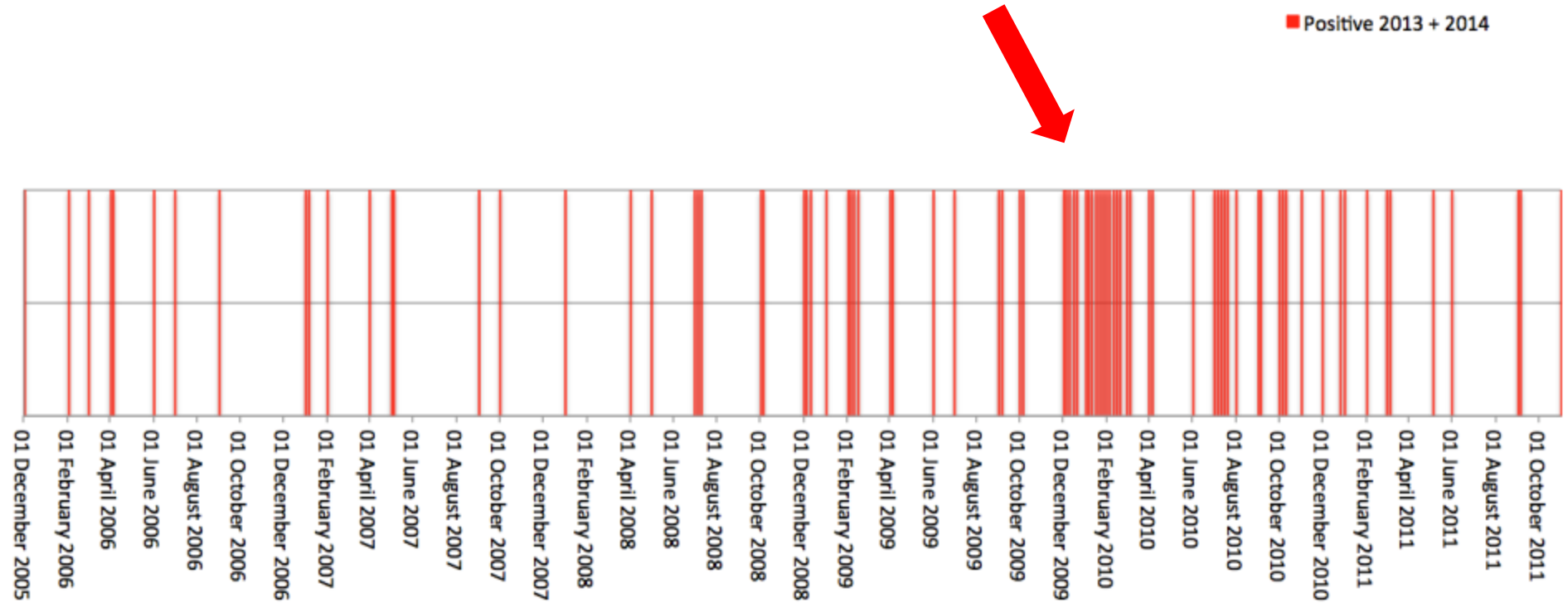
No Homebred +ve	23	24	20	28	35
Average Age +ve	4yrs 7mo	4yrs 11mo	5yrs 7mo	4yrs 7mo	4yrs 6mo

SRUC

JOHNE'S ACTION

A cluster of animals infected previously can emerge on testing

20 Animals



Key Messages from a Farmer

- It is a challenging disease so be realistic regarding rate of progress:
  - The immune response and tests are not perfect
  - Events 3+ years ago affect outcomes
  - It is an iceberg disease – only see the tip
  - It is hard to keep motivating staff
- Attention to detail needed but some quick wins
- Eradication in expanding commercial herd unlikely
- Farmers must monitor & manage their status & risks
- Everyone in the industry has to be responsible

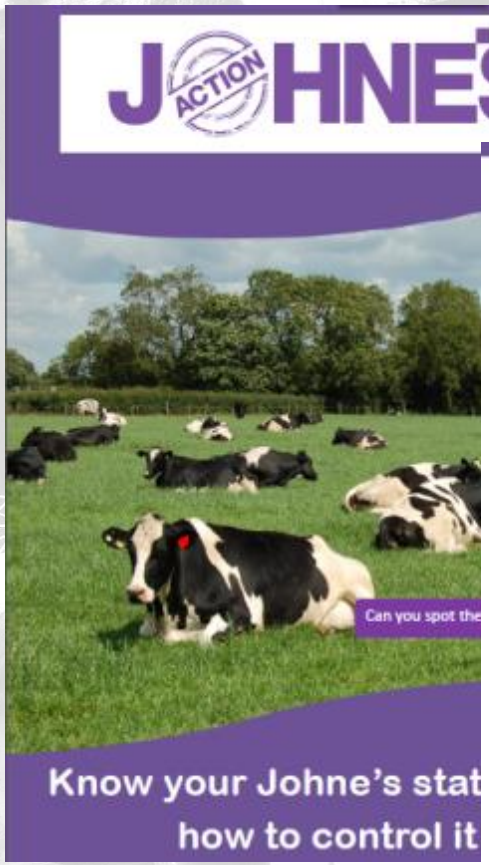
Key Messages to Control Johne's Disease

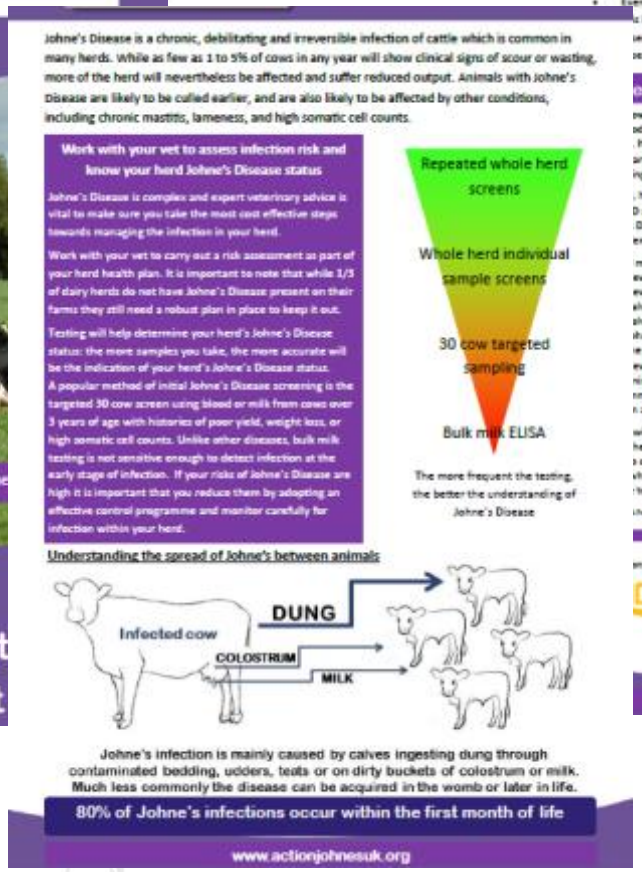
- 1.Know Your Status-Eliminate the source of infection
- 2.Break The Link-Prevent new calf infections
- 3.Agree a Herd Specific Risk Management Strategy with your Vet

See Ontario Johne's Whiteboard:

JOHNE'S ACTION

www.actionjohnesuk.org





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JOHNE'S ACTION