

Velkommen til Kursusrækken i kalvesundhed

2. samling 16-17/11-2016 på Rold Storkro

Henrik Læssøe Martin

Den Europæiske Landbrugsfond for Udvikling af Landdistrikterne:
Danmark og Europa investerer i landdistrikterne



Miljø- og Fødevareministeriet
NaturErhvervstyrelsen



Den Europæiske Landbrugsfond
for udvikling af Landdistrikterne

LDP 2020



Se EU-Kommissionen, Den Europæiske Landbrugsfond for Udvikling af Landdistrikterne

Dagens program

Wednesday, November 16 th			
Time	Topics	Lecturer	Time budget
8.30-9.00	Breakfast <i>Dyrlægerne Himmerland Kvæg</i> <i>Markedsvej 6 A</i> <i>9600 Aars</i>		
9.00	Welcome & introduction	H&H	15 min.
9.15-10.15	Anatomy/Introduction to Ultra Sound Scanning of respiratory system	Ramon Armengol Gelonch (RAG)	165 min. (incl. 15 min. coffee break)
10.30-13.00	Scanning exercises at <i>Højagergaard</i> <i>Binderupvej 17</i> <i>9600 Aars</i>		
13.00-13.45	Lunch		
14.00-15.30	On farm trouble-shooting in Spanish at Nygaard Gislumvej 96	RAG	90 min.
15.30	Driving to the hotel: <i>Rold Storkro</i> <i>Vælderskoven 10</i> <i>9520 Skørping</i>		
16.00-17.30	Coordinating presentations of home- work	Gruppearbejde	90 min.
18.00	Dinner		
19.30-20.30	Presentations of homework	Christine Maria Røntved	60 min.

Torsdag

Thursday, November 17 th			
Time	Topics	Lecturer	Time budget
7.00-8.00	Breakfast		
8.00-8.15	Introduction	H&H	15 min.
8.15-10.00	Best calving management practices to prevent stillbirth and improve health of pre-wean calves	Gustavo Schuene-mann (GS)	105 min.
10.00	Coffee		20 min.
10.20-12.00	Continued lecture...		100 min.
12.00	Lunch		
13.00-14.30	On-farm workshop on calving management <i>Ilse Søndergaard</i> <i>Hvalpsundvej 15</i> <i>9240 Nibe</i>	GS	90 min.
14.30	Coffee		
14.45-15.15	How to implement your action plans in practice	Vibeke Fladkær Nielsen	30 min.
	(Demonstration of LEAN tools)		
15.15	Evaluation and summary	H&H	15 min.
15.30	End of course		

Evaluering

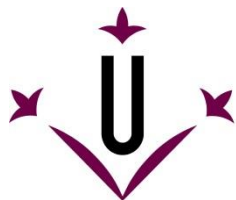
- Hvad synes i om dagen i dag?

Samling 2 - 16-17/11-2016

- Scanning af lunger + Trouble shooting on the farm v. Ramon Armengol
 - Hvor mange kan tage scanner med + sprit?
- Kælvning – Management v. Gustavo Schuenemann
- Opsætning af handlingsplaner/protokoller v. Vibeke Fladkær Nielsen

INTRODUCTION TO ULTRA SOUND SCANNING OF RESPIRATORY SYSTEM: THORACIC ULTRA SOUND (TUS)

Ramon Armengol DVM, PhD
Lleidavet, S.L. Dairy Veterinarians
Associate Profesor Animal Science Dept
Universitat de Lleida (UdL)



Universitat de Lleida
Departament de Producció
Animal



SUMMARY

1. Material
2. Anatomy
3. Tissues and technique
4. TUS Images
5. “Scoring” for TUS
6. Pros and Cons
7. Conclusions
8. Practical cases

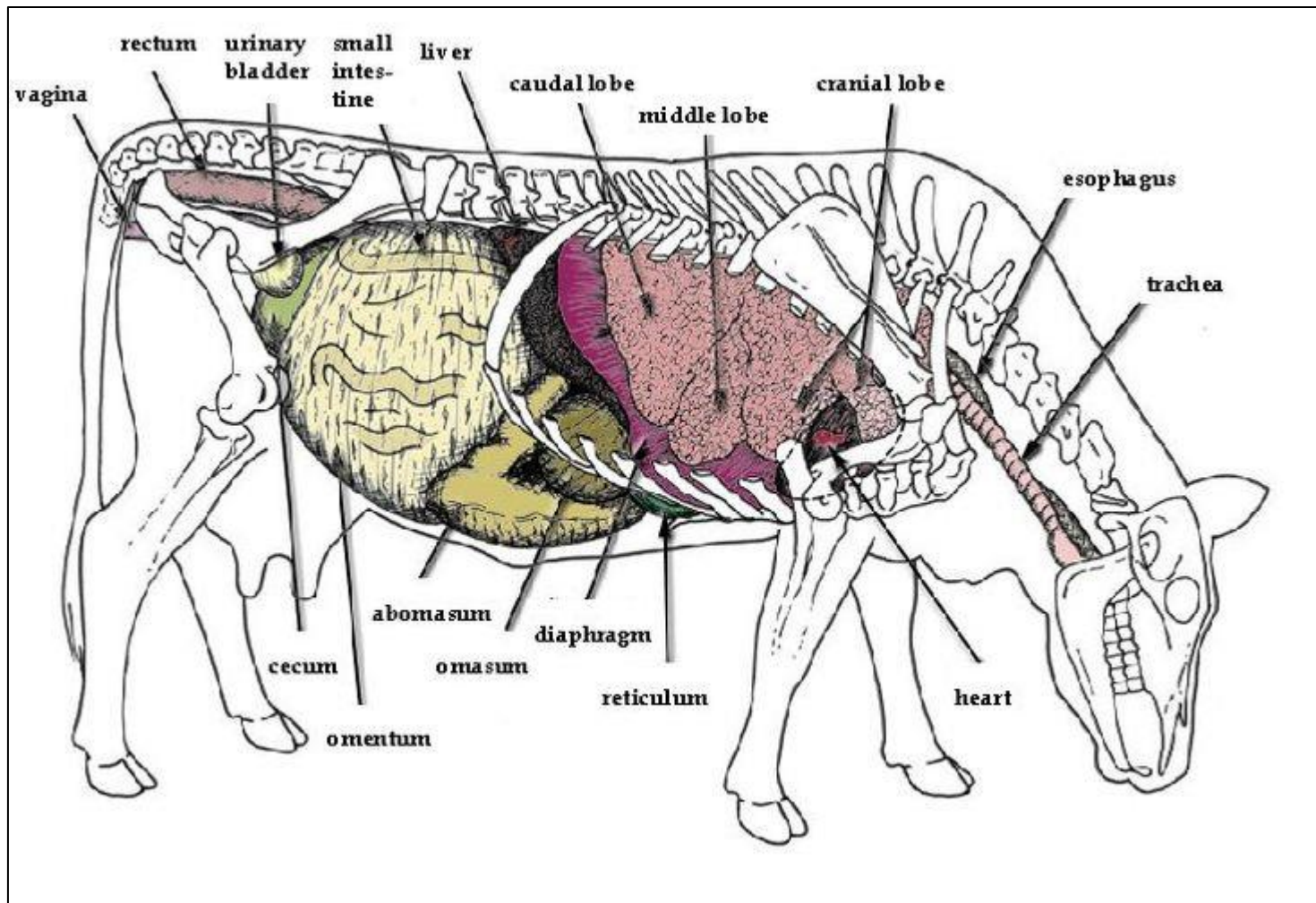
1. Material

- Linear Probe (same ultrasound system used for repro check).
 - Low Frequency for lung consolidation is needed.
- Alcohol 70° if young animals (pre weaned).
- Shaving of intercostal spaces (4-11 ribs) is needed + Eco Gel if Older animals (weaned and adults).

BUT...

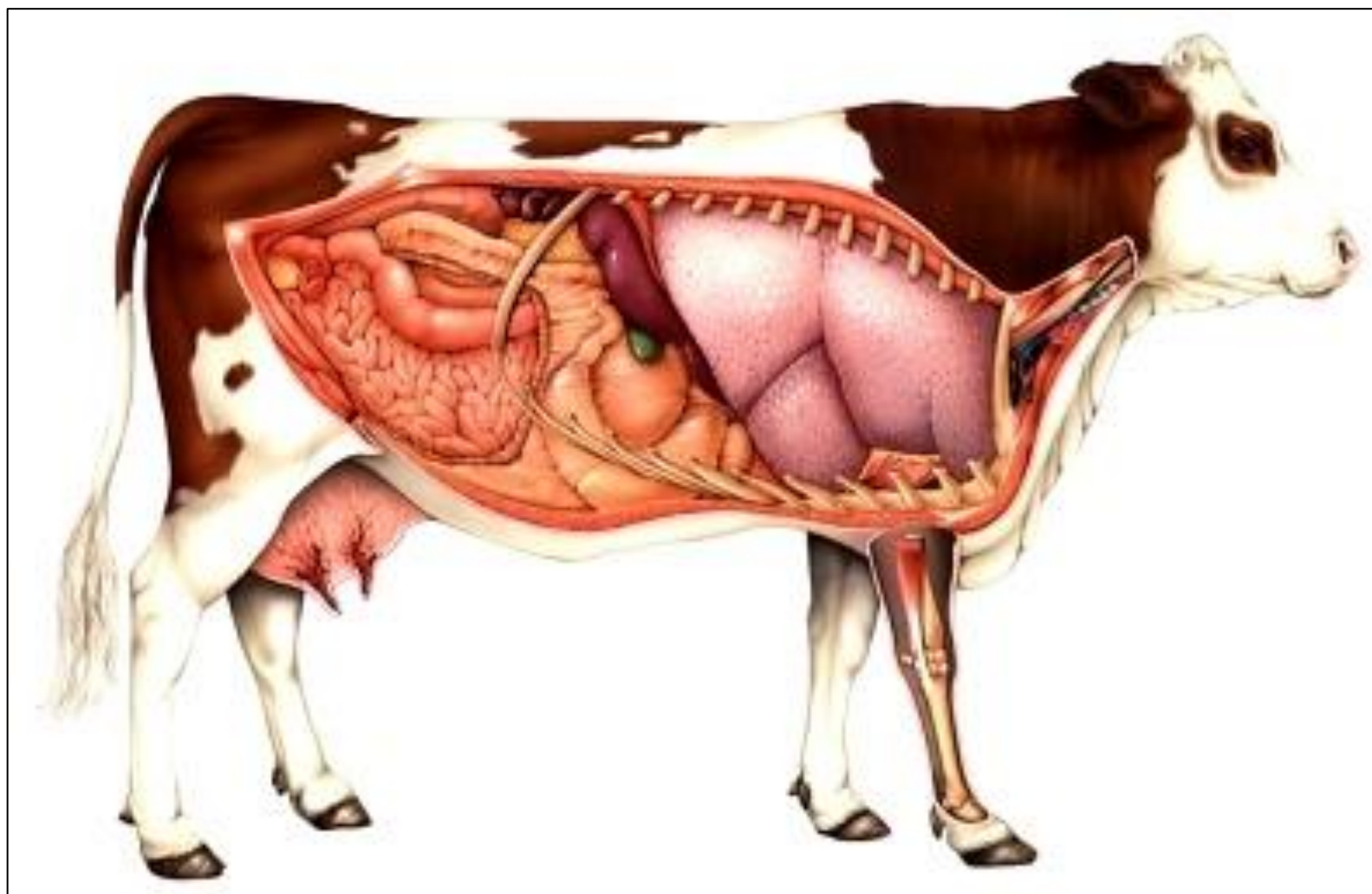
WE NEED TO REMEMBER A BIT OF
BOVINE ANATOMY...

2. Anatomy





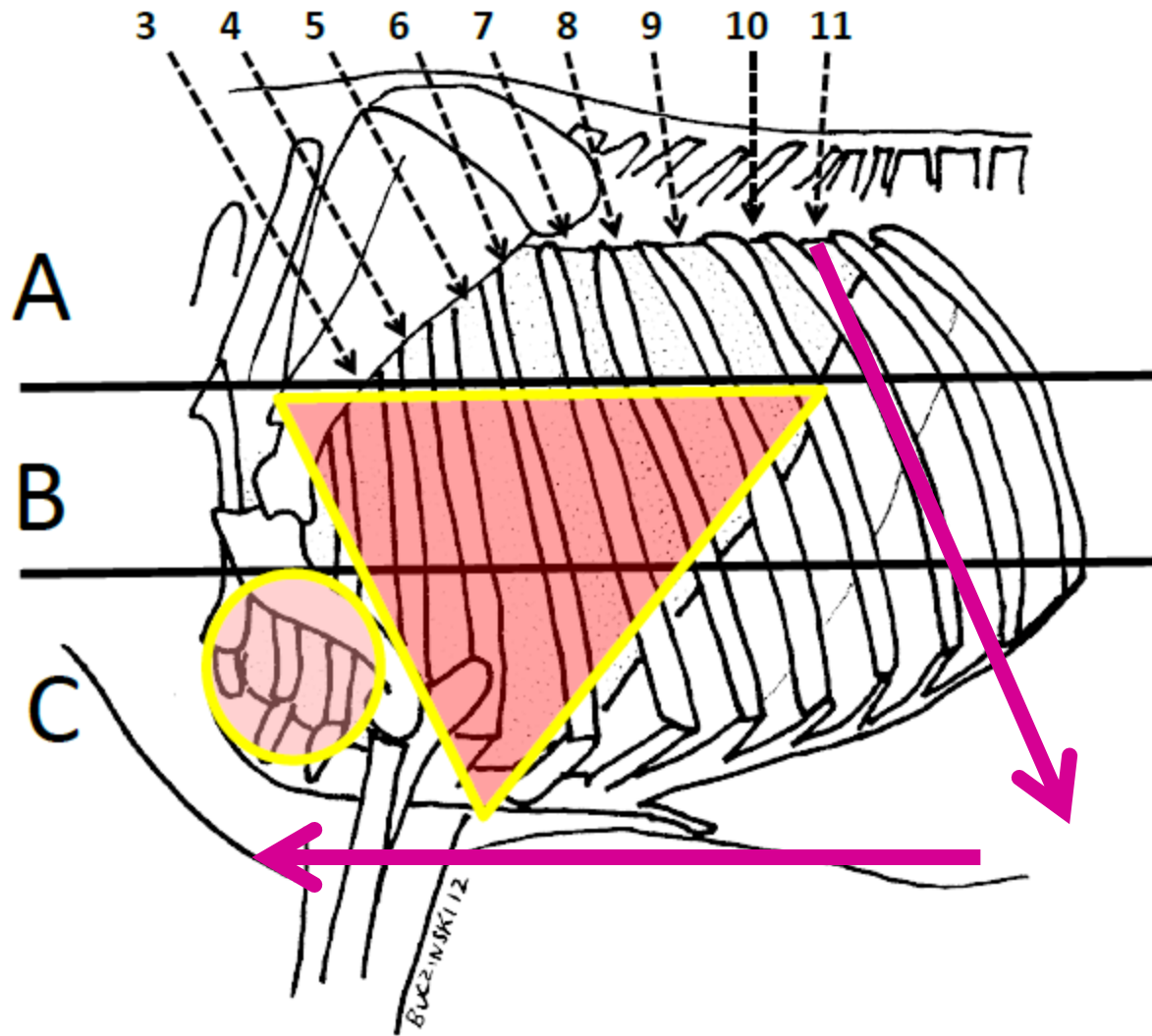




3. Tissues and technique

- Screening of visceral/parietal pleura.
- Lung tissue is NOT ecogenic (full of air).

APPROACH



Buckzinsky., 2012

Table 1**Landmarks for the right lung during ultrasonographic examination**

	Lung Lobe			
	Caudal	Middle	Caudal Aspect of Cranial Lobe	Cranial Aspect of Cranial Lobe
R-ICS	6–10	5	3–4	1–2
Ventral Landmarks	Diaphragm	CCJ and pleural deviation	Heart	Internal thoracic artery and vein

Abbreviations: CCJ, costochondral junction; R-ICS, right ICS.

From Ollivett TL, Kelton DF, Nydam DV, et al. Thoracic ultrasonography and bronchoalveolar lavage fluid analysis in Holstein calves affected with subclinical lung lesions. J Vet Intern Med. Accessed August 30, 2015. <http://dx.doi.org/10.1111/jvim.13605>. [Epub ahead of print.]

Olivett and Buczinsky, 2016. Vet Clin Food Anim 32 (2016) 19–35. <http://dx.doi.org/10.1016/j.cvfa.2015.09.001>

Table 2

Landmarks for the left lung during ultrasonographic examination

	Caudal	Lung Lobe	
		Caudal Aspect of Cranial Lobe	Cranial Aspect of Cranial Lobe
L-ICS	6–10	4–5	2–3
Ventral Landmarks	Diaphragm	CCJ and pleural deviation	Heart

Abbreviation: L-ICS, left ICS.

From Ollivett TL, Kelton DF, Nydam DV, et al. Thoracic ultrasonography and bronchoalveolar lavage fluid analysis in Holstein calves affected with subclinical lung lesions. *J Vet Intern Med*. Accessed August 30, 2015. <http://dx.doi.org/10.1111/jvim.13605>. [Epub ahead of print.]

Olivett and Buczinsky, 2016. *Vet Clin Food Anim* 32 (2016) 19–35. <http://dx.doi.org/10.1016/j.cvfa.2015.09.001>

Both sides?

- Always!
- Be consistent on the method...
- Anatomical limits
 - Left:
 - Craneal: Heart/ Timus
 - Caudal: Spleen
 - Right:
 - Craneal: Heart (Big Vessels)
 - Caudal: Liver

What will we see in a BRD positive animal?

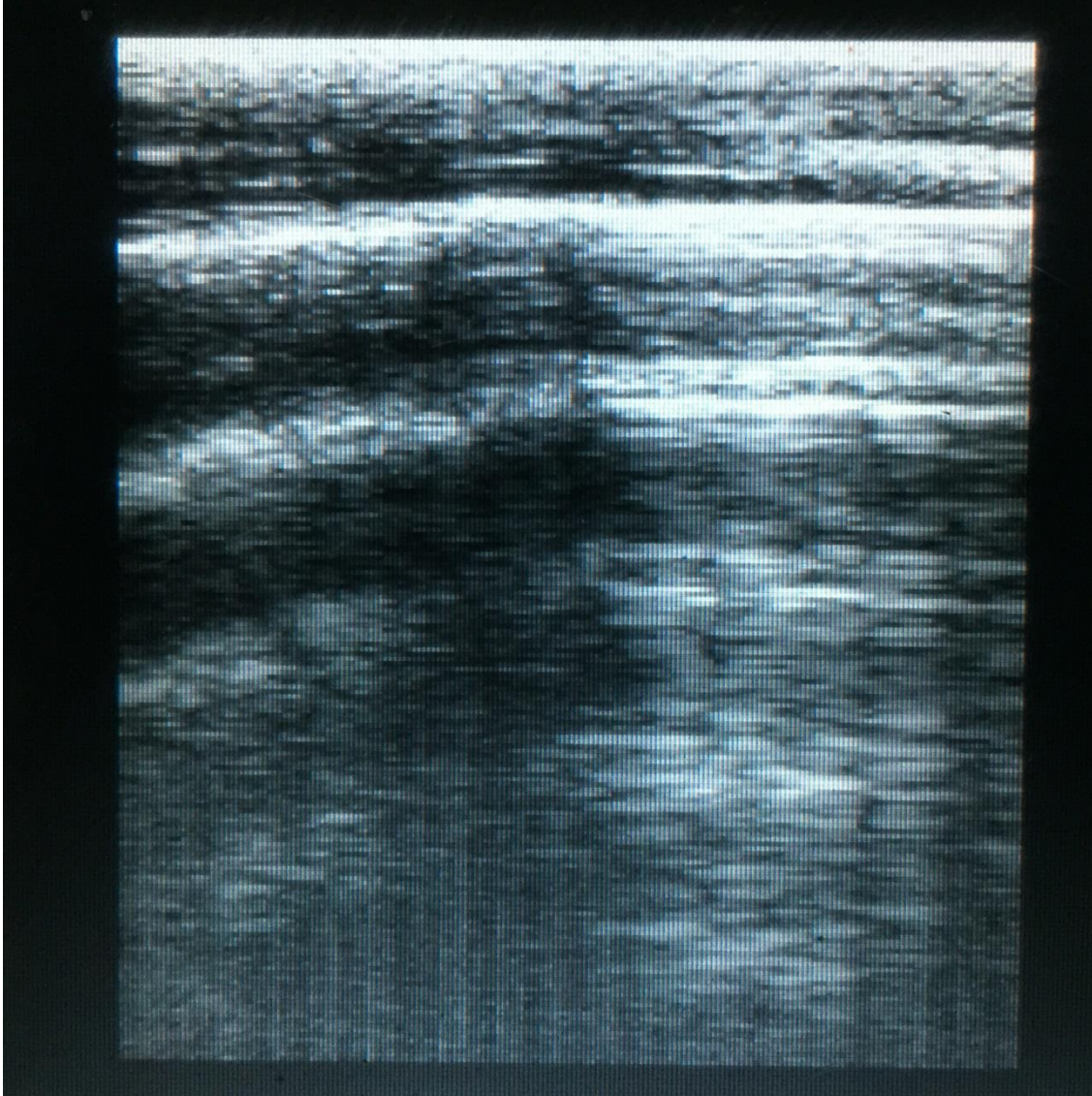
“Lesions resulting from BRD in feedlot calves occur in the cranioventral lung lobes and are characterized by bronchopneumonia or its sequelae, including collapse/consolidation, pleural adhesions, abscesses, parenchymal fibrosis, or emphysema (*Bryant et al., Bovine Pract 1999*).”

4. TUS Images

- Pleural disorders
- Lung tissue lesions
 - Abscess
 - Consolidation
- Ecographic artefacts
 - Reverberation
 - Comet Tails



Normal lung tissue.



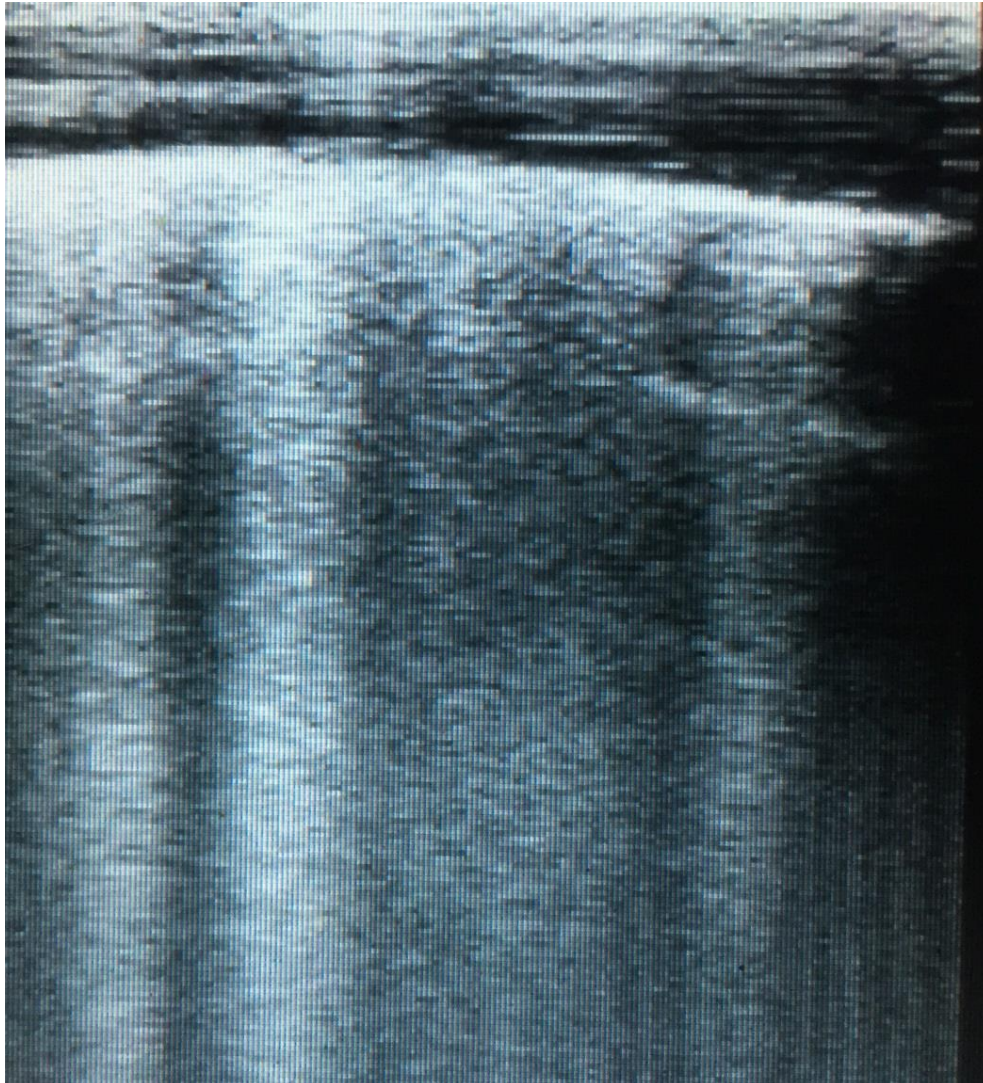
- Echoic
 - Pleural line
 - Reverberation artifacts.

Consolidation of lung tissue.



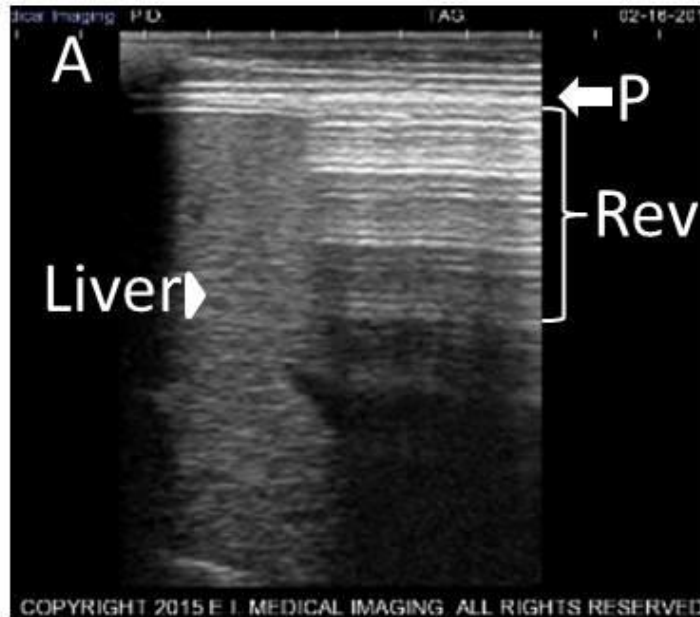
- Hypoechoic
 - Atelectasia
 - Cumuled gas

Acute neumonia? Edema? Normal?



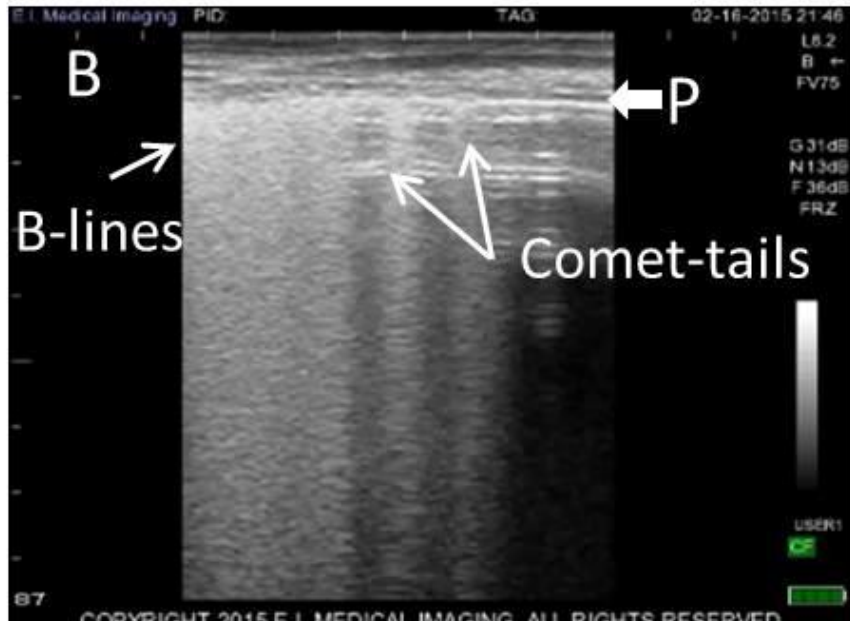
- Comet tails

5. Scoring for TUS (Adams & Buckzinski., JDS 2015)



1. No abnormalities, the reverberation artifact (Rev) allows observation of A-lines (reverberation lines; panel A);

Scoring ultrasound (Adams & Buckzinski., JDS 2015)



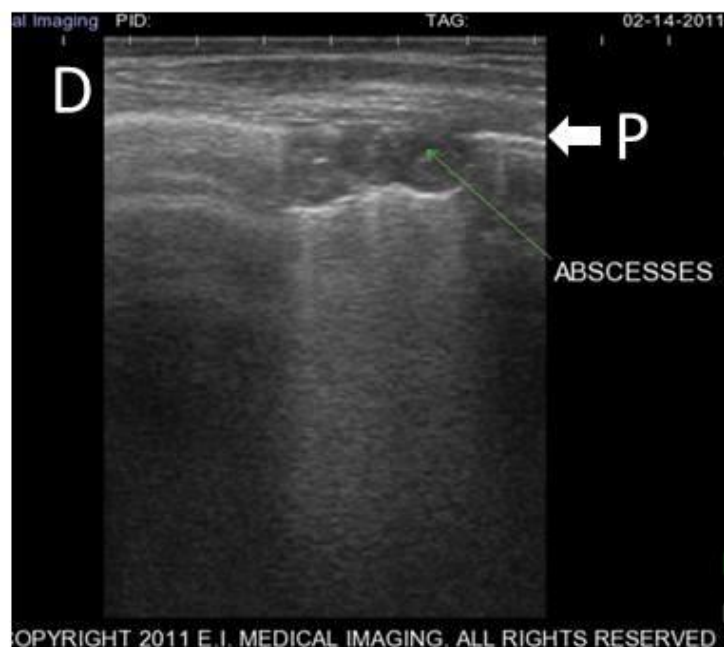
2. Multiple comet tails (arrows in B) on the pleural surface or B-lines (coalescence of multiple comet tails without significant lung consolidation)

Scoring ultrasound (Adams & Buckzinski., JDS 2015)



3. One or more location of lung consolidation ≥ 1 cm but < 6 cm.

Scoring ultrasound (Adams & Buckzinski., JDS 2015)



4. At least one site with ≥ 6 cm of consolidation, abscessation within the lung parenchyma (panel D), or significant pleural effusion (>1 cm; panel E), where P = pleural line, and Plef = pleural effusion

Data to take into account...

- IDEAL <14% of calves score 3-4
- ALERT 14-20% of calves score 3-4
- PROBLEM >20% of calves score 3-4

Easier “On farm” diagnosis...

- 2 cut-offs defined *a priori* :
 - $\geq 1\text{cm}$ previously reported to define lung lesions
Buczinski et al., Prev Vet Med, 2015
 - $\geq 3\text{cm}$ associated with decreased average daily gain (ADG) (-50g/d during preweaning period). *Ollivett et al., AABP 2014.*

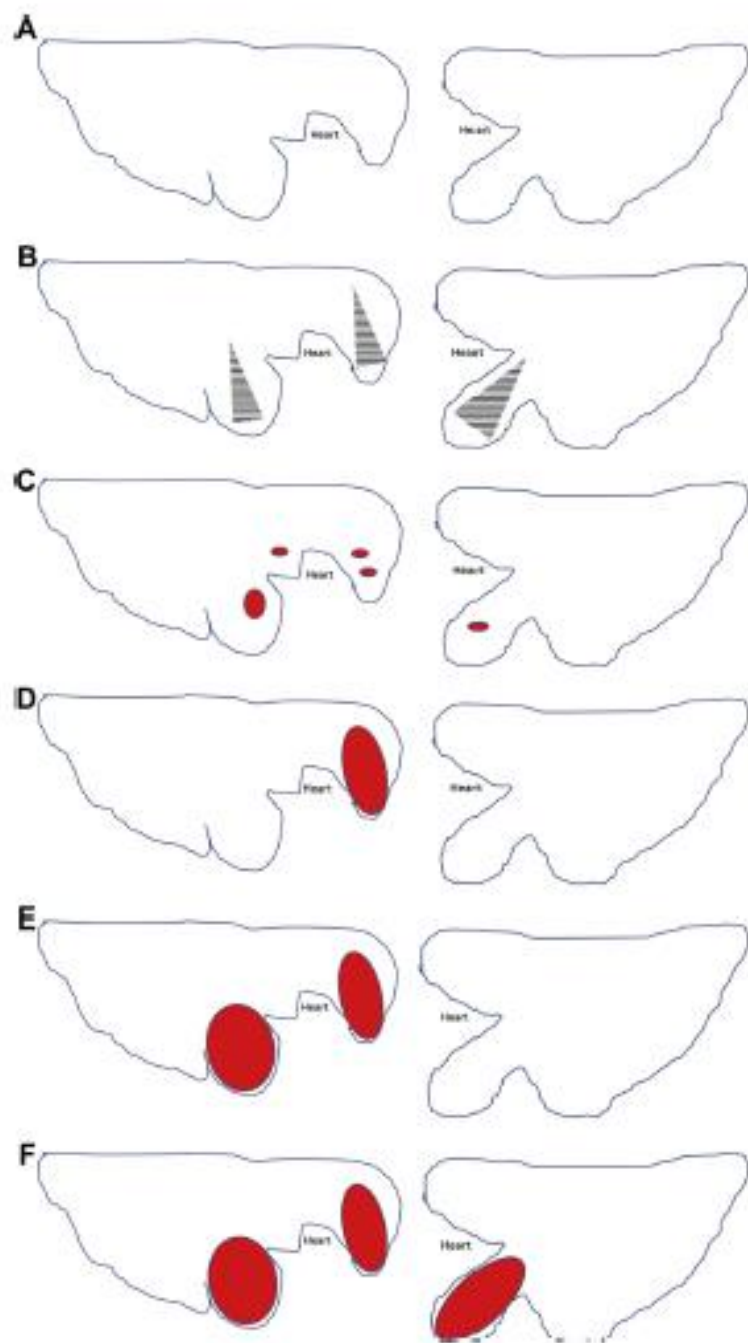


Fig. 12. Ultrasonographic scoring system (0–5) used to categorize young cattle. (A) US score 0 indicates normal aerated lung with no consolidation and none to few comet-tail artifacts. Ultrasonographically, normal lung appears as a bright white, or hyperechoic, line. (B) US score 1 indicates diffuse comet-tail artifacts without consolidation. (C) US score 2 indicates lobular or patchy pneumonia. Small lobular lesions are most likely to be viral in nature and may not warrant treatment. (D) US score 3 indicates lobar pneumonia affecting only 1 lobe. (E) US score 4 indicates lobar pneumonia affecting 2 lobes. The cranial and caudal aspects of the cranial lobe are scored individually. (F) US score 5 indicates lobar pneumonia affecting 3 or more lobes.

6. Pros and Cons in individuals

Advantages

- Easy.
- Accurate detection of lung lesions.
- Monitoring efficacy of treatments.

Disadvantages

- Only superficial lesions.
- Difficult to classify cases (clinical, subclinical, chronic). Unless repeated
- Only in intercostal space.

Why TUS in a herd level?

Advantages

- Easy and fast.
- Protocol.
- Good combination with other scoring systems
- Detection of lack of control of BRD/ Management?!
- Productive evaluation of animals (culling?).
- Good monitoring of data.

Disadvantages

- Further research is needed...

7. Conclusions

- TUS is fast, accurate and practical.
- Subclinical and chronical cases of BRD are included.
- Perfect for combination with other scoring systems.
- Evaluation of treatment, management changes, etc.
- Business opportunity.

8. Practical Cases



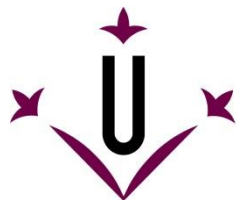


KEEP
CALM
AND
KEEP
PRACTISING

ON FARM TROUBLE-SHOOTING

DIFFERENT FARM SITUATIONS REFERED TO BRD

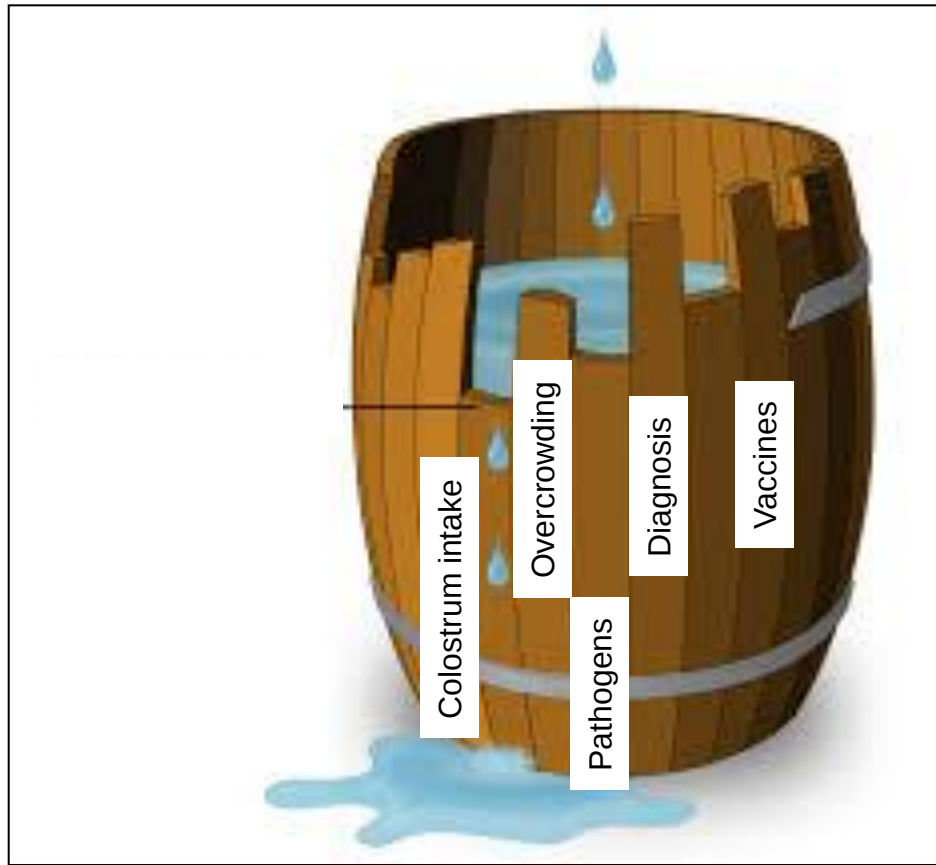
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Universitat de Lleida
Departament de Producció
Animal



The Barrel Theory...



Have an idea of the situation. Ask for info...

- Concrete mortality rates?
- Is it a new situation?
- Any changes?
- Any protocol?

Have an idea of the situation. Ask for info...

- Data collection?
 - Treatments?
 - Scoring?
 - Other cause of death? NCD, Septicemia, etc.
 - Necropsy?
 - Lab Diagnosis?
 - Slaughter?
 - Other parameters of interest? (reproductive, mastitis, milk quality...)

What are we going to do?

1. Talk a lot with the **farmer**.

- Explain your strategy
- Show him you want to be part of the team.
- Give more than one option if possible (Economics? Resources?)
- Establish a schedule.
- Give a prognosis.
- “And now...we have to meet with the workers...”

What are we going to do?

2. Talk a lot with the **workers**.

- Show them they are an important part of the team.
- Make things easy and possible.
- Give them tools and rules.
- Everything written or codified.

FARM SITUATIONS

Considering BRD...

FARM 1: HIGH BRD PROBLEMS

- **Mortality rate >10%**
- Prevalence rate >20%

Animals are dying of BRD!



CLINICAL CASES ARE THE TARGET!!

1st Step:

“We have to do “something” right now!”

1. Necropsy.
2. Sampling for ethiology and antibiograma
3. Treatment:

Short term antibiotic (8-12 h)

NSAIDS

WATER

Support treatments if necessary

Think on vaccination as a curative treatment.

2nd Step : Avoiding illness for new animals...

1. **Colostrum Intake.**

- Serum sample from animals ranging 2-7 days of live. (FPT?)
- Ensure quality, quantity and timing.

2. **Vaccination protocols (the curative part...) Vaccines are not the miracle...**

3. **Management, Housing and economics.**

2nd Step :

Avoiding illness for new animals...

4. Metaphylaxis with long duration antibiotics?
5. Start data collection.
6. Training on early clinical diagnosis ([Mc Guirk, 2014](#))

3rd Step : Regular visits.

- Daily - Weekly.
- Report of Lab diagnosis.
- Control and Modify protocols, rules and tools?
- **Establish clinical scoring for BRD (and other diseases?)**
- If people is doing a good job...**TELL THEM!**

4th Step: Data analysis

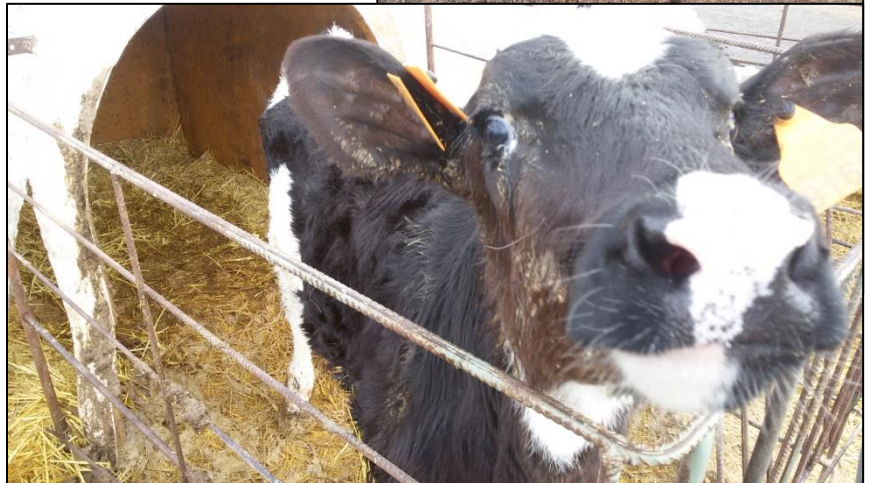
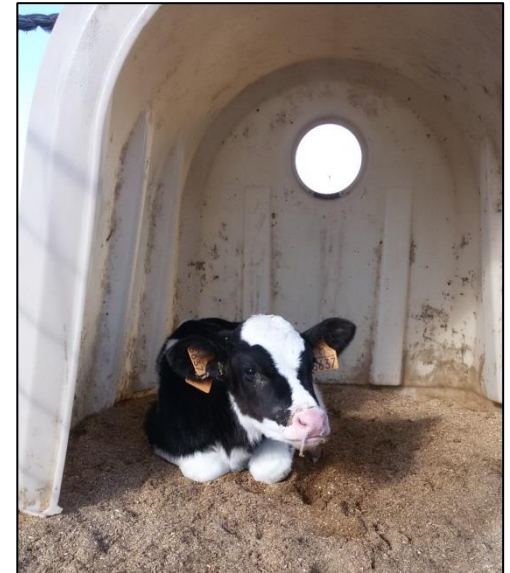
- Every 3 months... Depending on size farm...
- Data analysis.
 - Presentation of results (statistics?)
 - Economics?
- Make sure that protocols are being well done. ROUTINE is a danger!

FARM 2: MODERATE BRD PROBLEMS

- Mortality rate= 5-8%
- **Prevalence rate = 10-12%**

**Animals get BRD sick
and some of them
die...**

**CLINICAL BUT ALSO
SUBCLINICAL
ANIMALS ARE THE
TARGET**



- Calculate if there will be enough heifers for the future

Heifers needed =

(n of cows%elimination of cows*age at 1st parturition/12)*(1/(1-((% heifers mortality/12)*age at 1st parturition)))*

- Cost of a heifer at birth: 280-300 eur
- Cost of a heifer at parturition: 1800-2200 eur
- Cost of a day: 2-2.5 eur
- Loss ADG= Loss of future production, longevity, etc.

- Cost of vet and drugs

1st Step: “ Calve’s curation”

1. Sampling for ethiology and antibiograma
2. Treatment:
Control administration and dosage/ Recurrence?
3. Ask for farm protocols:
Vaccination, calostrum intake, scoring?
4. Metaphylaxis?

2nd Step :

Avoiding illness for new animals and make them notice that subclinical cases are very important...

1. Colostrum Intake.

- Serum sample from animals ranging 2-7 days of live. (FPT?)
- Ensure quality, quantity and timing.
- Talk about «clean colostrum»

2. Review vaccination protocols.

- Talk about one single use needle, preparation of vaccines...

3. Metaphylaxis with long duration antibiotics?
4. **Establish clinical scoring for BRD (and other diseases?)**
5. Necropsy all dead animals (SUBCLINICAL?)
6. Start data collection.

7. Take a great picture of BRD prevalence of the farm:
 - **SHOW YOUR WONDERFUL ULTRASOUND EQUIPMENT!**
 - **Talk about the importance of subclinical cases (less productive live, less ADG, outbreaks, etc)**
 - The lesions are more frequent during winter **Buckzinsky 2016, Dublin**
 - 1cm cut-off (17% vs 50%)
 - 3cm cut-off (8% vs 15%)

3rd Step : Regular visits.

- Weekly- Monthly.
- Report of Lab diagnosis.
- Control and Modify protocols, rules and tools?

- Try to find out when subclinical cases appear:
 - Repeated treatments?
 - Serial ultrasound checkings in different ages (but same animals!)
Get de ADG if possible...
- If people is doing a good job... **TELL THEM!**

4th Step: Data analysis

- Every 3-6 months...
- Data analysis.
 - Presentation of results (statistics?) lower prevalence, clinical/subclinical rates.
 - Economics? ADG, lower prevalence, etc
- Make sure that protocols are being well done. ROUTINE is a danger!

FARM 3: **NO** BRD PROBLEMS

- Mortality rate < 3- 5%
- **Prevalence rate <5%**

**SUBCLINICAL
CASES ARE THE
TARGET**



1st Step: Make sure that there are no BRD problems at all

1. Ask for farm protocols:

Vaccination, colostrum intake, scoring?

2. Ask for data: mortality/ prevalence/ ADG...

3. Metaphylaxis? Not necessary

2nd step :

Demonstrate that subclinical cases can be controlled and is good for the farm...

1. Colostrum Intake. 
2. Review vaccination protocols. 
3. Talk about tools that can help further improve

- Pasteurizer

- Ultrasound

3rd step : Regular visits.

- 3-4 times a Year.
 - Control and Modify protocols, rules and tools?
 - Try to find when subclinical cases appear:
 - Repeated treatments?
 - Serial ultrasound checkings in different ages (but same animals!)
- Get the ADG if possible...

4th Step: Data analysis

- Every 6 months...
- Data analysis.
 - Presentation of results (statistics?) lower prevalence, clinical/subclinical rates.
 - Economics? ADG, lower prevalence, etc.
- Make sure your proposals are efficient and work...
 - “ Leaning on economic arguments on future production can be a good idea...”

**CONGRATULATE FARMER AND
WORKERS!**

LEARN FROM THIS FARMER!

KEEP
CALM
AND
LOVE
COWS

MANGE
TAK!

Honorarium and other expenses

Kursusrække i kalvesundhed
DDD-DDD-15-180- K2016150

Honorarium	DKK
Travel expenses	
Board and lodging	600
Other expenses	
Total	600
Currency	EUROS

Note: Original documents for the expenditure must be attached.

ALL FIELDS ARE REQUIRED. PLEASE WRITE CLEARLY (BLOCK LETTERS)

Name	LLEIDAVET, SLP (Dr. Ramon Armengol)
Date of birth (mm/dd/yy)	-
Address	C/LA VINYA 12
City/state	ALPICAT, 25110
County	SPAIN
Telephone	+34 629955641
Email address	lleidavet@gmail.com

Name of Bank	BANC DE SABADELL
Bank address	C/MAJOR 34
City/state	ALMACELLES
County	SPAIN
IBAN/Account no	ES51 0081 7063 5900 0121 0022
BIC (SWIFT) (8/11 characters)	BSAB ESBB
Clearing code (only outside EU)	

Date: November 28th 2016

Signature:

Payment

This form and the original documents for the expenditure shall be submitted to the Secretariat immediately after the meeting, after which payment will be made.

Setting up a Transition Cow Program for Best Health and Performance of Dairy Cows and Calves

Gustavo M. Schuenemann, DVM, MS, PhD
Dairy Extension Veterinarian
Department of Veterinary Preventive Medicine,
College of Veterinary Medicine



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What are the Three Largest Expenses of a Dairy Business?

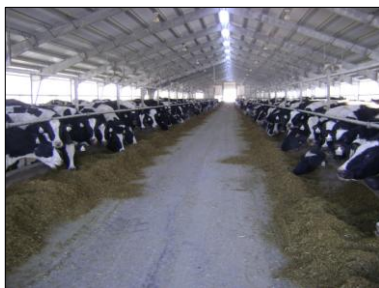
- Feed for lactating dairy cows
- Raising replacement heifers
- Labor



(©2016 G.M. Schuenemann)

What is the Largest Expense of a Heifer Raising Operation?

➤ Feed



(©2016 G.M. Schuenemann)

What Determines Days on Feed?

■ Age at Calving; which is determined by:

- Nutrition management
- Growth (ADG) & development
- Conception
- ...

BUT "management" within the first 2 months of life determines the lifetime performance of the cow, regardless of the genetic merit

(Heinrichs and Heinrichs, 2011)



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Transition Cow Management

Traditional Management

- Focused on diagnostic and treatments (metritis, cysts, hypocalcemia, etc.) of post-partum cows
- Managing individual problem cows
- Nutritional management focused on milking cows
- Reproduction: Detection of estrus and AI
- Focused on monitoring results or responses

(NRC, 2001; Overton and Waldron, 2004 JDS 87:E105-E119)

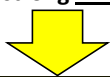
Transition Management

- Focused on integrated management of pre- and post-partum requirements (energy, protein, minerals/vitamins) to ↑DMI and ↓metabolic diseases
- Managing groups of cows (diet, BCS, reproduction, etc.)
- Reproduction: multiple options
- Focused on monitoring processes

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Basic Physiological Functions to Avoid Transition Cow Diseases

- Resting time (h/d; "cow comfort")
- Dry matter intake (ketosis) and adaptation of the rumen to lactation diets (SARA)
- Maintenance of normocalcemia
- Maintenance of a strong immune system



Determine the Prevalence of both metabolic and infectious diseases

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Does the Transition Cow Management Matter for Calf Performance?

Gustavo M. Schuenemann, Juan M. Piñeiro y Paula Turiello



(©2016 G.M. Schuenemann)

Objective

- Assessing the association among pre- and post-partum management practices with 21-d PR and milk yield of 41 dairy herds in Argentina
- What management practices are significantly associated with calf and cow performance?
- This information is KEY to implement a preventive program at herd level

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Dairy Herd Assessment

- Survey instrument to collect:
 - Demography (breed, herd size, facilities)
 - Management practices for cows and heifers (facilities, feed/water, criteria to initiate breeding in heifers)
 - Health and reproductive management (protocols, vaccination)
 - Personnel management (training, frequency, personnel turn-over, economic incentives)
- 17008 lactating cows, distributed in 41 herds

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Distribution of Management Practices and Reproductive Performance

Variables [†]	n	Mean, %	Range
Years in business	41	27.3	3-50
Herd size, n	41	414	78-2300
Milk yield, kg/vaca/d	41	29.5	12.6-33.8
21 d PR, %	41	17	5-31.5
Housing-Confinement			
Si	19	17.6	10-22
No	14	18.2	5-31.5
Written protocols			
Si	17	18.9	14-31.5
No	16	16.6	5-26
Personnel training			
Si	21	19.8	14-31.5
No	12	14.0	5-26

[†]Management practices among 41 dairy herds in Argentina.

Prevention of hypocalcemia = use of anionic salts in pre-partum dairy cows (yes or no).

VWP = voluntary waiting period (days in milk from calving to initiation of breeding programs).

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Distribution of Management Practices and Milk Yield

Variables [†]	n	Mean, %	Range
TMR training			
Yes	17	28.2	18-32.9
No	23	23.6	14-27
Water analysis			
Yes	15	29.7	24-32.9
No	24	23.4	14-27
Prevention of hypocalcemia			
Si	21	19.3	10-31.5
No	12	15.1	5-22.2
Criteria to initiate AI in heifers			
Si	17	18.4	14-22
No	16	17.3	5-31.5

[†]Management practices among 41 dairy herds in Argentina.

Prevention of hypocalcemia = use of anionic salts in pre-partum dairy cows (yes or no).

VWP = voluntary waiting period (days in milk from calving to initiation of breeding programs).

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Correlation among Management Practices and Reproduction (21-d PR)

Items [†]	21-d PR	Prevention hypocalcemia	Personal Training	VWP	Protocols	Criteria to initiate AI in heifers
TP 21-d	1 (-)	0.36 (0.032)	0.57 (0.006)	0.59 (0.0001)	0.37 (0.011)	0.47 (0.002)
Prevention hypocalcemia		1 (-)	0.54 (0.0003)	0.31 (0.05)	0.64 (<0.0001)	0.44 (0.004)
Personal Training			1 (-)	0.44 (0.004)	0.53 (0.0004)	0.58 (<0.0001)
VWP				1 (-)	0.35 (0.02)	0.33 (0.03)
Protocols					1 (-)	0.61 (<0.0001)
Criteria to initiate AI in heifers						1 (-)

[†]Management practices among 41 dairy herds in Argentina.

Prevention of hypocalcemia = use of anionic salts in pre-partum dairy cows (yes or no).

VWP = voluntary waiting period (days in milk from calving to initiation of breeding programs).

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Correlation among Management Practices and Milk Yield

Items ^a	Milk Yield	Facilities	TMR Training	Protocols	Milking Frequency	Water Analysis	Criteria to initiate AI in heifers
Milk Yield	1 (-)	0.46 (0.022)	0.54 (0.006)	0.52 (0.008)	0.67 (0.0003)	0.68 (0.0002)	0.50 (0.012)
Facilities		1 (-)	0.33 (0.038)	0.53 (0.0004)	0.63 (<0.0001)	0.45 (0.002)	0.52 (0.0006)
TMR Training			1 (-)	0.57 (0.0001)	0.33 (0.033)	0.38 (0.012)	0.58 (<0.0001)
Protocols				1 (-)	0.45 (0.003)	0.70 (<0.0001)	0.61 (<0.0001)
Milking Frequency					1 (-)	0.63 (<0.0001)	0.47 (0.002)
Water Analysis						1 (-)	0.47 (0.002)
Criteria initiate AI in heifers							1 (-)

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Conclusions: Reproduction

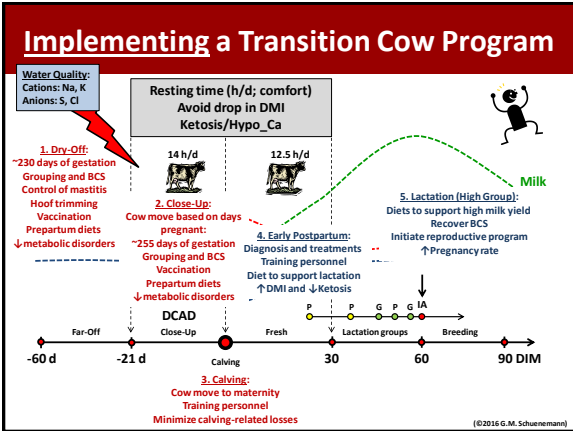
- Considerable variation in PR 21-d (26.5 percentage points) that could be attributed to pre- and post-partum management
- These management practices **explain >52%** of the observed “variation”
- Areas with significant weight on PR 21-d:
 - Replacement program (**↑4.6 percentage points**)
 - Prevention of metabolic diseases (**↑4.2 percentage points**)
 - Personnel training (**↑5.6 percentage points**)

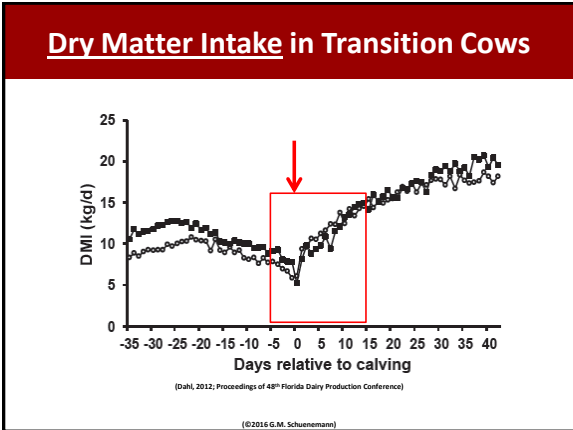
(©2016 G.M. Schuenemann)

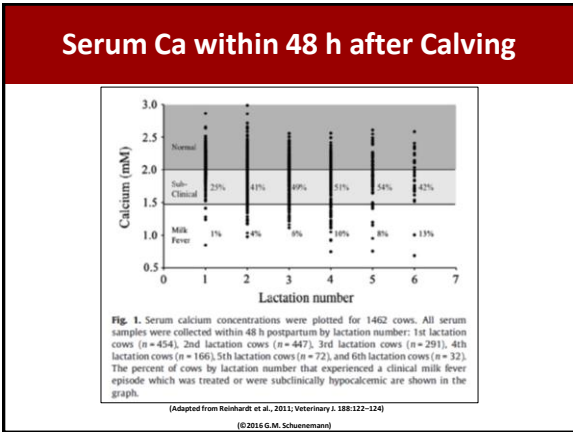
Conclusions: Milk Yield

- Considerable variation in milk yield (21.2 kg/cow/d) that could be attributed to different diets and/or management
- These management practices **explain >54%** of the observed “variation”
- Areas with significant weight on PR 21-d:
 - **Personnel training** (primarily on TMR; **↑5.5 kg/cow/d**)
 - **Defined criteria** (**↑5.4 kg/cow/d**) to initiate breeding in replacement heifers

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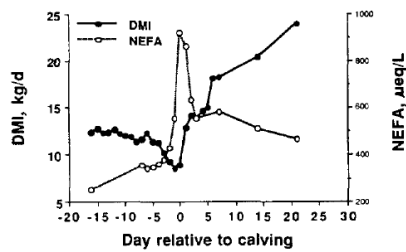
10 L of Colostrum: 11 Mcal of energy, 140 g of protein, 23 g of calcium, 9 g of phosphorus, and 1 g of magnesium

(Goff and Horst, 1997 JDS 80:1260-1268; Kehoe et al., 2007 JDS 90:4108-4116; Tsioulpas et al., 2007 JDS 90:5012-5017)

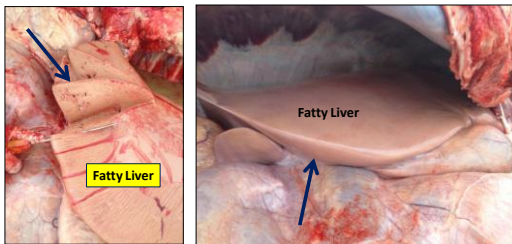


Etiology of Metabolic Disorders of Lactating Dairy Cows

(Adaptado de Grummer, 1993; JDS 76:3882-3896)



Lactating Dairy Cow with Fatty Liver at 8 DIM



Fatty Liver and Health

Categories of Fatty Liver	TG in Liver (% wet weight)	Ketosis Urinary	DM Intake, Milk Production	Health and Reproduction	Status of Liver
Normal	<1%	0	0	0	Normal
Mild	1-5%	+	0	—	Infiltration centro-lobular of TG
Moderate	5-10%	++	0	— —	Infiltration of TG in whole liver
Severe	>10%	+++	— — —	— — —	Enlarged and necrotic

*TG = Triacylglycerol
(Adapted from Bobe et al., 2004, JDS 87:3105-3124)

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Prevalence of Fatty Liver within the First 30 DIM

Study	Country	Breed	Prevalence of Fatty Liver, %	
			Moderate (5-10% TG*)	Severe (>10% TG*)
Reid, 1980	UK	Holstein	48	15
Reid, 1980	UK	Guernsey	33	5
Gröhn et al., 1987 Mazur et al., 1988	Finlandia France	Ayrshire	65	15
Schäfer et al., 1991	Germany	NR	53	20
Acorda et al., 1995	Japan	Holstein	33	11
Jorritsma et al., 2000 Jorritsma et al., 2001	Holland	NR	45	14
Gerloff et al., 1986	USA	NR	20	15
Herdt et al., 1991	USA	NR	NR	24
Average			42.4	14.9

*TG = Triacylglycerol
(Adapted from Bobe et al., 2004, JDS 87:3105-3124)

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J. Dairy Sci. 95:7158-7172
http://dx.doi.org/10.3168/jds.2012-5812
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Evaluation of periparturient calcium status, energetic profile, and neutrophil function in dairy cows at low or high risk of developing uterine disease

N. Martinez,* C. A. Risco,† F. S. Lima,* R. S. Bisinotto,* L. F. Greco,* E. S. Ribeiro,* F. Maunsell,† K. Galvão,‡ and J. E. P. Santos*¹

*Department of Animal Sciences, University of Florida, Gainesville 32611
†College of Veterinary Medicine, University of Florida, Gainesville 32610

- Parturient cows received anionic salts:
 - DCAD de -94 mEq/kg MS
- ~54% incidence of hypocalcemia (<8.6 mg/dL)
- Without clinical hypocalcemia
- Without oral administration of calcium

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Evaluation of peripartal calcium status, energetic profile, and neutrophil function in dairy cows at low or high risk of developing uterine disease

N. Martinez,^{*} C. A. Risco,[†] F. S. Lima,^{*} R. S. Bisinotto,^{*} L. F. Greco,^{*} E. S. Ribeiro,^{*} F. Maunsell,[‡] K. Galvão,[‡] and J. E. P. Santos^{*,†}
^{*}Department of Animal Sciences, University of Florida, Gainesville 32611
[†]College of Veterinary Medicine, University of Florida, Gainesville 32610

■ Cows with Subclinical Hypocalcemia:

- 2x ↑ NEFA and BHBA post-partum (12 DIM)
- 2.4x ↑ milk fever post-partum
- ↓ 20% [neutrophils], ↓ 17% oxidative stress/phagocytosis
- ↓ [Mg] in blood
- 3x ↑ risk for METRITIS
- ↑ 30% the risk for Endometritis
- ↑ days open (15 days)

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Priorities for Grouping Cows

What is the GOAL?

1. ↓ Metabolic diseases (hypocalcemia/ketosis)
2. ↑ DM Intake (↑milk, ↓cost of feeding)
3. ↑ Reproduction (↑CR, ↑PR & ↓PL)
4. ↑ longevity (↓culling)
5. ↑ flow through milking parlor
6. ...

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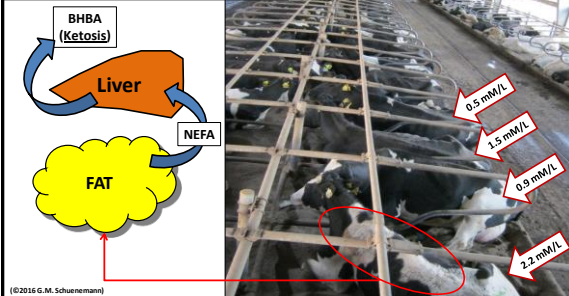
Setting Up Priorities for Groups

1. Transition Cows:
 - a. Prepartum (21 d; ↓hypocalcemia)
 - b. Postpartum/Fresh (21-30 DIM; ↓ketosis)
2. A group for lact=1
3. A group for lact ≥2 or lact ≥4 (↑risk):
 - Reproductive status
 - Fat cows/end of lactation
 - High vs low milk production

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Build the Dairy around “Cow Comfort”

The NEB of pre-fresh and early lactation cows affect reproduction

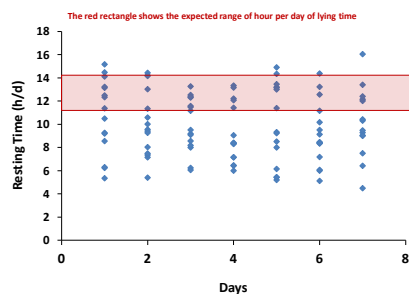


Can I Assess Cow “COMFORT” on My Farm?

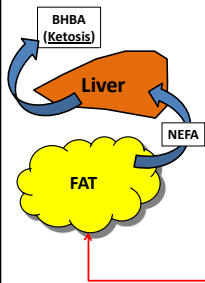
IceCube Devices to assess “Lying Time” of cows (IceRobotics)



Dairy A: Lying Time (h/d) for Pre-Partum Cows and Heifers



Ketosis Type 1



Type 1 (Classic Ketosis):

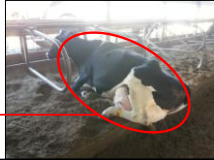
- Within 14-20 days post-partum
- Respond well to TRT with glucose

Causes:

- ↓ Grains, ↑ Fat and ↓ forage quality

Diet Management (Fresh cows):

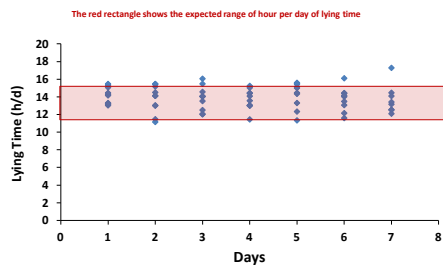
- Starch (~25%)
- Protein (>17%)



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Dairy B:

Lying Time (h/d) for Pre-Partum Cows and Heifers



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Cows Have a Strong Behavioral Need to Rest (Lying Time; h/d)

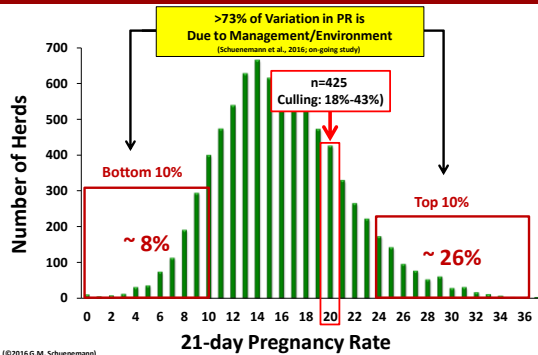
- For every 3 minutes of lost rest, cows sacrifice 1 minute of "DM intake"
- Example "pre- and postpartum cows":
 - Resting ↓ 2 h/d – DM intake ↓ 40 min/d (~2 kg)
- Factors associated with Lying Time:
 - Bedding surface
 - Milking frequency
 - Stocking density
 - Grouping (cows and heifers) pre- and postpartum
 - ...

(Mott, 1985; Hogster et al., 2002; Munggaard et al., 2005; Cooper et al., 2007)

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Variation in Dairy Herd Performance

(DMRS 2013; n=8211 dairy herds)



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Economics of Transition Management: ↑Metabolic, ↓Reproduction, ↑Culling

1000-cow herd		Culling within 60 DIM	
Items	6%	12%	
Pregnant, n	603.00	610.00	
Lactating, %	85.5	85.6	
Milk, kg/d	29.30	29.00	
Milk sales, \$	12905.00	12771.00	
Cows sales, \$	470.00	607.00	
Calf sales, \$	606.00	635.00	
Replace costs, \$	1214.00	1490.00	
Breeding costs, \$	319.00	315.00	
Feeding costs, \$	4983.00	4963.00	
Other costs, \$	2500.00	2500.00	
Profit, \$/d	4935.00	4715.00	
Profit, \$/yr		\$80,300.00	

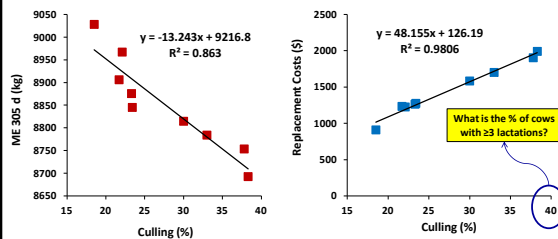
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(Schuenemann and Galvão, 2014 JDS 97:288)

For Each Unit of Culling Increment:

- Milk Yield Decreased 13.24 kg/cow/yr
- Replacement Costs Increased 48.15 \$/day

For 1000-Cow Herd with ≥ 30% Culling,
Losses (\$) May Offset the Milk Genetic Progress (~1% per Yr)



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A prospective study of calf factors affecting first-lactation and lifetime milk production and age of cows when removed from the herd¹

A. J. Heinrichs² and B. S. Heinrichs
Department of Dairy and Animal Science, The Pennsylvania State University, University Park, 16802

Risk Factors for Lifetime Performance of Replacements:

- Each unit of calving difficulty: **-195 kg** ($P=0.05$)
- Weaning age (>60 d): **-463 kg** ($P=0.02$)
- Days ill: **-126 kg** ($P<0.01$)
- Wean DMI (for every 1 kg DM): **+286 kg** ($P=0.02$)

...

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Lactating Cows: Final Remarks

- Milk yield increases as lactating cows age (2nd and 3rd lactations); BUT mature cows are at greater risk for transition diseases
- Culling offers an opportunity to replace unproductive animals, BUT $\geq 30\%$ culling may offset the milk genetic progress

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Replacement Heifers: Final Remarks

- Events (dystocia, diarrhea, days treated, and ADG) within the first 2-months of life (weaning) reduce first-lactation and lifetime milk production
- Genomic selection offers an opportunity to select superior replacements, BUT “management” early in life determines the lifetime performance regardless of genetic merit

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Nutrient/Calcium Balance at Calving on Survival, Health, and Performance of Post-Partum Holstein Cows and Calves

A. Hunter¹, M. Maquivar³, S. Bas¹, T.A. Brick¹, W.P. Weiss⁴, H. Bothe², J. Velez², and G.M. Schuenemann¹

¹Department of Veterinary Preventive Medicine, The Ohio State University

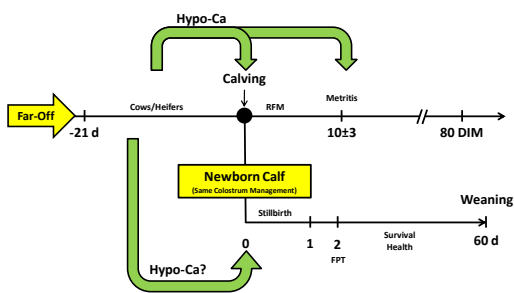
²Aurora Organic Dairy, Platteville, CO, USA

³Department of Animal Sciences, Washington State University, Pullman, WA 99163

⁴Department of Animal Sciences, The Ohio State University

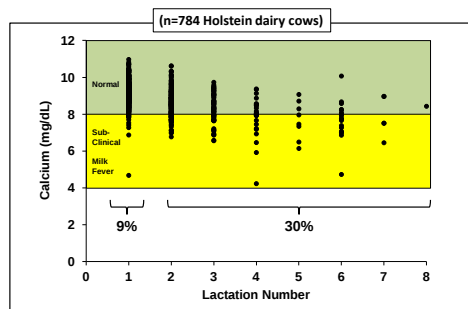
(©2016 G.M. Schuenemann)

Serum [Ca] of Dams at Calving are Associated with Calf Diarrhea



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Total Serum Ca within 2 h after Calving



(Serum samples were analyzed for total calcium; Calcium Liquicolor No. 0150, Stanbio Laboratory, Boerne, TX)

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Effect of Ca Status at Calving on Health Status of Lactating Dairy Cows

Items	Serum Ca Status		p
	Hypocalcemia (≤ 8.0 mg/dL; n=113)	Non-Hypocalcemia (> 8.0 mg/dL; n=660)	
Metritis, %	29.4	17.3	0.02
Mastitis, %	7.8	4.4	0.1
Culled within 30 DIM, %	23.5	6.9	< 0.001
P/AI for 1 st service, %	30	37	0.2

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How about the Effect of Ca Status of Dams at Calving on Calf Survival and Health?



Effect of Ca Status of Dams at Calving on Health and Performance of Female Calves

Items	Serum Ca Status		p
	Hypocalcemia (≤ 8.0 mg/dL; n=113)	Non-Hypocalcemia (> 8.0 mg/dL; n=660)	
Stillbirth, %	2	2.5	0.3
FPT (≤ 5.5 mg/dL), %	2.1	2.5	0.87
Diarrhea within 10 d of age, %	49	33.3	0.04
Weaned, %	89	92	0.4

Pre-weaning growth rate was not assessed, BUT calf with diarrhea had reduced ADG
(Van Amburgh et al., 2014)

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Strategy to Prevent Hypocalcemia

FIRST OPTION:

- Easy: Mg ($\geq 0.3\%$) y Vit D ($\sim 22\text{k IU/d}$)
 - Usually Easy: P (0.26 a 0.28%)
 - Difficult: K ($\sim 1\%$) and Ca (0.55%)
- Easy + Ca as low as possible + K as low as possible
+ Mg sulfate

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(Courtesy of Dr. W.J. Weiss)

Strategies to Prevent Hypocalcemia

SECOND OPTION:

- Feed anionic diets to reduce DCAD
- $$\text{DCAD (mEq)} = (\text{Na} + \text{K}) - (\text{Cl} + \text{S})$$
- VERY effective, BUT does not accept errors
 - Requires a pre-partum group
 - Should monitor urine pH (~ 6.2 ; range: 6-6.8)
 - Expensive

(Hart et al., 1997 JDS 80:1269-1280; Goff and Hart 1998 JDS 81:66)

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(Courtesy of Dr. W.J. Weiss)

Management Strategies for Transition Cows

Variables		Number of Cows				Eventos Asociados
		>1000	500	100	50	
Groups or Pens	Pre-partum (21 d)	+++	++	+/-	+/-	↑ Dry matter intake ↓ Hypocalcemia (Clinical) ↓ Ketosis ↓ Metritis/ RP/DA ↑ Milk yield ↑ Reproduction
	Post-partum (21-30 DIM)	+++	++	+/-	+/-	
Control Hypocalcemia: Anionic salts or ↓ Ca/↓ K (21 d pre-partum)		+++	+++	++	++	
Control Ketosis: diets Energy/Protein/INDF (first 30 DIM)		+++	+++	++	++	

(Gomez and Cook, 2010; J. Dairy Sci. 93:5772-5781; Schuenemann et al., 2014; unpublished data)

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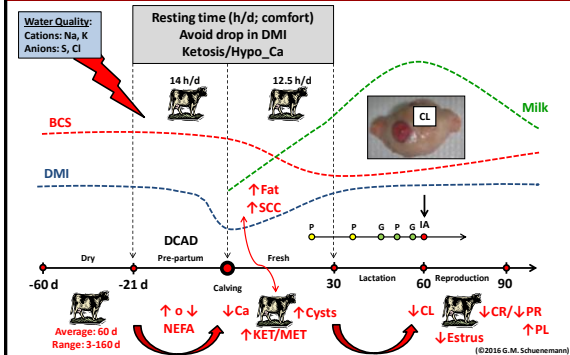
Dairy Herd with 60 Milking Cows

Facilities: 2 pens (1=lactating and 1=dry cows) and 1 pen for replacements
Feeding Management: 2 diets (lactating and dry)
Pre-partum (~21 d): feed anionic salts 2x per day (using a cow holster)
Fresh (~25 d): supplement with [energy] 3x per day (2x milking and 1x holster)



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Integrating Concepts



Replacement Calf Program

- **Pre-Partum:**
 - 50% of fetal growth: last two months of gestation
 - ↑ colostrum synthesis (IgG, etc)
 - Management: cow comfort to ↑ DM intake and ↓ metabolic diseases (hypocalcemia and ketosis)
- **Post-Partum:**
 - Calf responses: ↑ colostrum quality, ↓ stillbirth/FPT
 - Cow Responses: ↑ milk, ↑ cyclicity (% of cows with CL), ↑ reproduction and ↓ pregnancy loss

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Example Diets and Water Quality

- **Group Discussion:**
 - Review pre-partum diets for dry cows and replacement heifers:
 - Energy, CP (%), fNDF (%), calcium, etc
 - Assessment of water quality and diet “Cations-Anions Balance”

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THANK YOU!



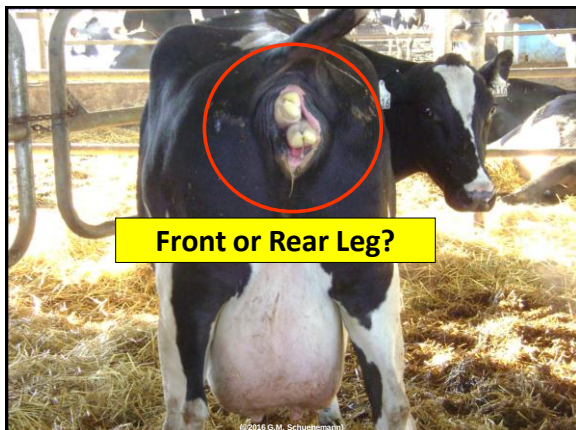
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Calving Management and Training Maternity Personnel

Gustavo M. Schuenemann, DVM, MS, PhD
Department of Veterinary Preventive Medicine,
College of Veterinary Medicine

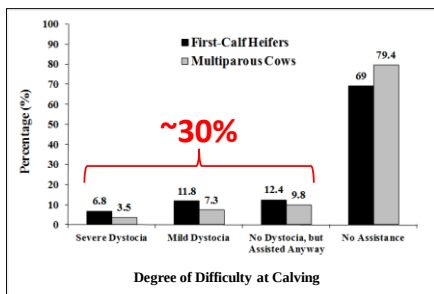


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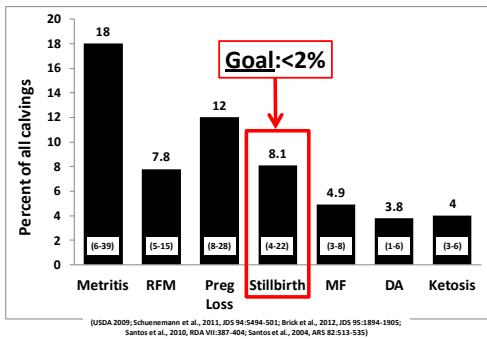
Frequency of Dystocia



(USDA, 2010. USDA/APHIS/VS, CEAH, Fort Collins, CO.)

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Prevalence of Calving-Related Events



Calving Management Program: ↓ Stillbirth and ↑ Calf Development

- 1) Calving & colostrum protocols
- 2) Management (nutrition & reproduction):
 - Replacements: **birth-weaning**-breeding-calving
 - Dry cows: **BCS, hypocalcemia**, days dry
- 3) Training/re-training & regular meetings
- 4) Records:

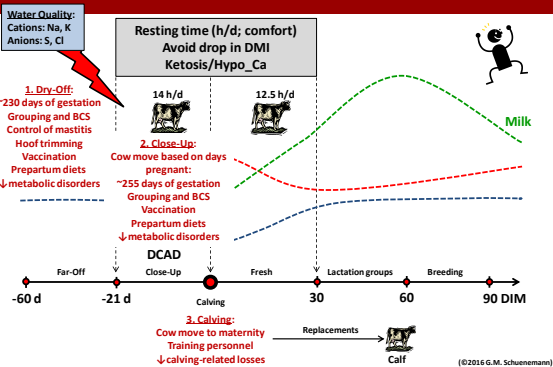
Leading Indicators:
diet, facility/comfort, sire,
people, breeding program,
water quality, schedule
expected calving date
parity, age at calving

+/- Indicators:
BCS, hypocalcemia,
gender, shift change
calf presentation,
twins

Lagging Indicators:
dystocia, stillbirth,
calving time

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Implementing a Transition Cow Program



Definition of Stillbirth



Calving Management

- Equipment/resources for the task (protocols)
- Know what to expect (what to look for and why is that important)
- Know what to do (knowledge and skills)
- Know the leading risk factors
- ...



Determine the Prevalence of Stillbirth

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Prepartum Cow "COMFORT" Increases the Prevalence of Stillbirth

- Monitor "lying time" (h/d) to determine:
 - Potential problems with dry matter intake
 - Negative energy balance
 - Increased "standing" time is associated with lameness
 - ...



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Cows Have a Strong Behavioral Need to Rest (Lying Time; h/d)

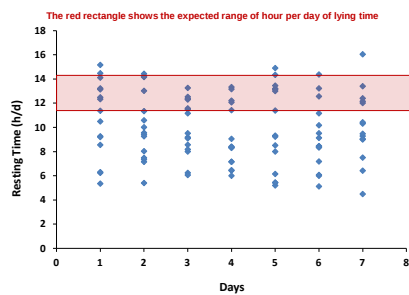
- For every 3 minutes of lost rest, cows sacrifice 1 minute of "DM intake"
- Example "pre- and postpartum cows":
 - Resting ↓ 2 h/d – **DM intake ↓ 40 min/d (~2 kg)**
- Factors associated with Lying Time:
 - Bedding surface
 - Milking frequency
 - Stocking density
 - Grouping (cows and heifers) pre- and postpartum
 - ...

(Metz, 1985; Hogster et al., 2002; Munksgaard et al., 2005; Cooper et al., 2007; Schuenemann et al., 2016)

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Dairy A: Lying Time (h/d) for Pre-Partum Cows and Heifers

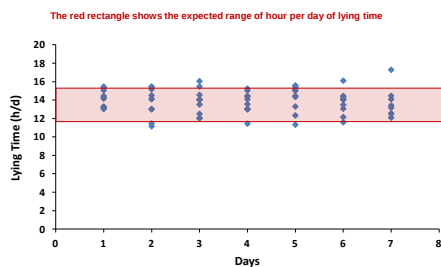
(Schuenemann et al., 2016; on going study)



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Dairy B: Lying Time (h/d) for Pre-Partum Cows and Heifers

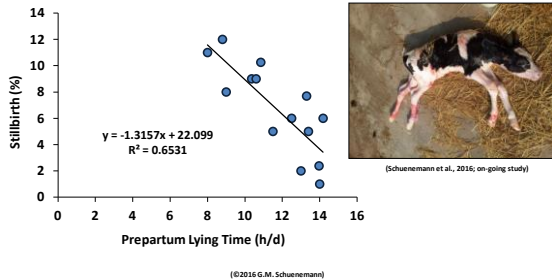
(Schuenemann et al., 2016; on going study)



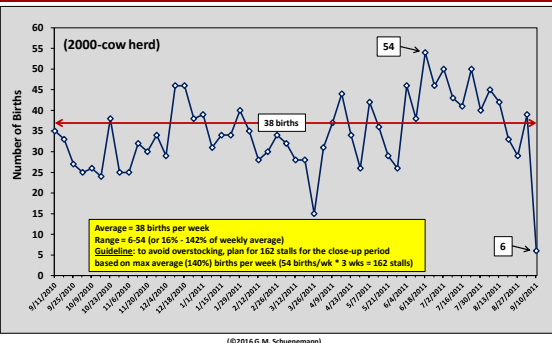
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Stillbirth Decreases 1.3 Percentage Points for Every Hour of Additional Lying Time

Lying time (h/d) of prepartum cows (20 to 10 d prior to calving) were correlated with the annual prevalence of stillbirth (%) of 14 dairy herds in Ohio



For Free-stall Barns, How Do I Estimate the Size of My Pre-Partum Pen?

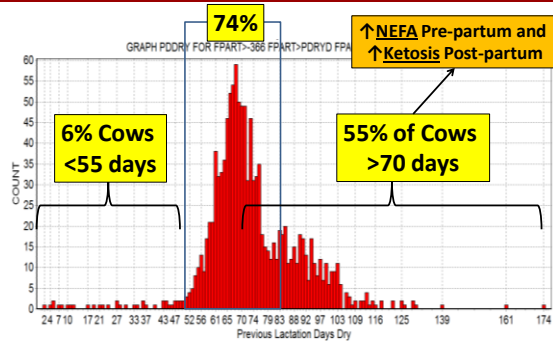


Management of Pre-Partum Cows

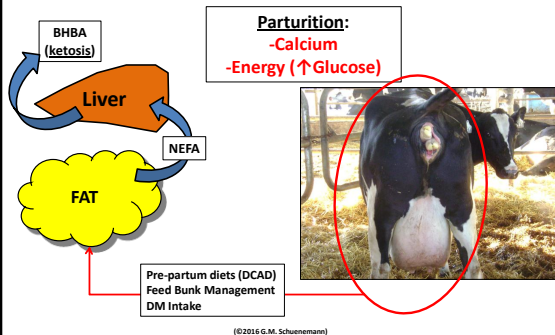
- Assumption: "calving date" is known
- If "no-calving dates" (bull bred heifers or cows; unknown pregnancy status) or missing records:
 - Likely to "overstock" pre-partum pens
 - ↓DM Intake, ↑NEFA (primarily heifers)
 - ↑calving difficulty (↓glucose)
 - ↑ketosis in early lactation

(©2016 G.M. Schuenemann)

Does the Pattern of Previous Dry Period Lengths Match the Management Plan?



Why is Important the Energy and Calcium Status at Calving?



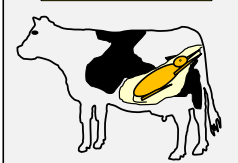
10 L of Colostrum: 11 Mcal of energy, 140 g of protein, 23 g of calcium, 9 g of phosphorus, and 1 g of magnesium

(Goff and Horst, 1997 JDS 80:1260-1268; Kehoe et al., 2007 JDS 90:4108-4116; Tisoulpas et al., 2007 JDS 90:5012-5017)

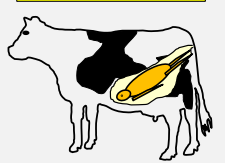


Normal Calf Delivery

Forward or Anterior



Backward or Posterior



Estimated values:

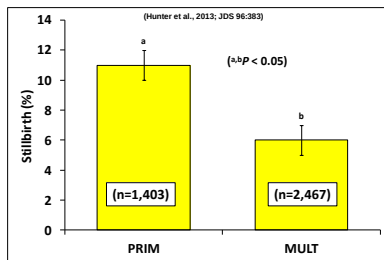
- Forward or Anterior = 96%
- Backward or Posterior = 4%
- Multiple calves = 5%
- Breech = 1%

(Hunter et al., 2013 JDS 96:383)

(©2016 G.M. Schuenemann)

Effect of Parity on Stillbirth

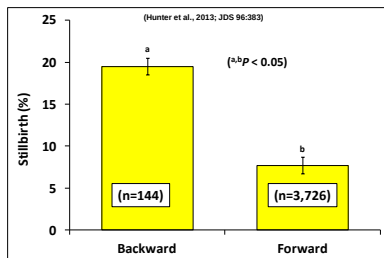
▪ 1 dairy herd; 3,870 births



(©2016 G.M. Schuenemann)

Backward Presentation

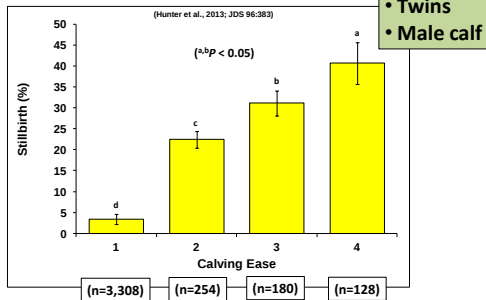
▪ 1 dairy herd; 3,870 births



(©2016 G.M. Schuenemann)

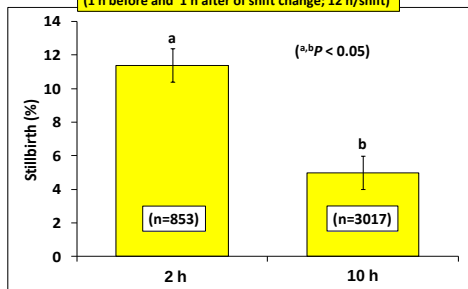
Effect of Calving Ease on Stillbirth

• 1 dairy herd; 3,870 births

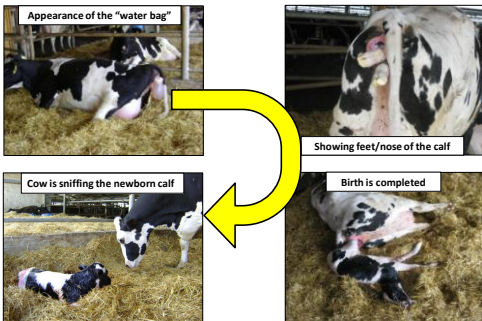


Effect of Communication at the Time of Personnel Shift Change on Stillbirth

(1 h before and 1 h after of shift change; 12 h/shift)



Monitor Calving Progress (evident every 15-20 minutes)





J. Dairy Sci. 96:2671-2680
<http://dx.doi.org/10.3168/jds.2012-5976>
 © American Dairy Science Association®, 2013.

Dairy calving management: Description and assessment of a training program for dairy personnel

G. M. Schuenemann,¹ S. Bas, E. Gordon, and J. D. Workman
 Department of Veterinary Preventive Medicine, The Ohio State University, Columbus 43210

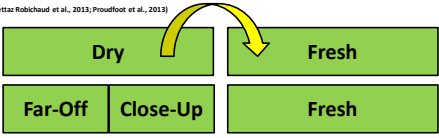
Signs of Normal Births	Description	References
Appearance of the AS or feet of the calf outside the vulva	Landmark references	Noakes et al., 2001 Schuenemann et al., 2011
Signs of calving progress	Evident every 15-20 minutes	Schuenemann et al., 2011
Mean time since the appearance of the AS outside the vulva to birth	70 minutes(*)	Noakes et al., 2001 Schuenemann et al., 2011
Mean time since the appearance of the feet of the calf outside the vulva to birth	65 minutes(*)	Schuenemann et al., 2011
Time that a cow or first-calf heifer is in labor (abdominal contractions)	≤2 hours	Gundelach et al., 2009 Schuenemann et al., 2011
Frequency of observation	At least every 1 hour	Schuenemann et al., 2011

(*) The mean times were estimated using the mean + 2 SD (standard deviation)

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Risk Factors Associated with Stillbirth

- Season (winter-spring)** (Lombard et al., 2007; JDS 90:1751-1760)
 - Calving rate (# of births per unit of time) (Schuenemann et al., 2013; JDS 96:2671-2680; Hunter et al., JDS 96:385)
- Heat Stress – ↓DMI and calcium balance
- Managing groups of cows/first-calf heifers
- Cow move and obstetric intervention (Villettaz Robichaud et al., 2013; Proudfoot et al., 2013)



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Guidelines for Assisted Births

OBSERVATION

Parturition Begins → Normal Birth

No Calving Progress

INTERVENTION

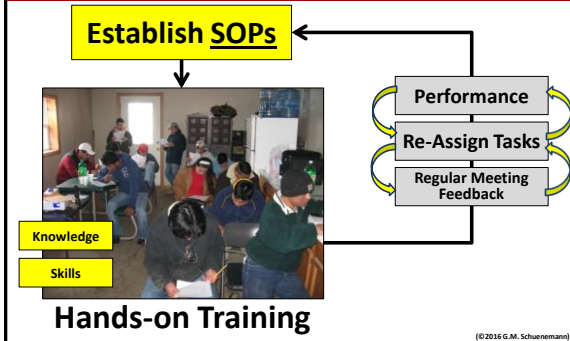
Normal presentation, position, and posture → Guidelines for Assisted Extraction → Extraction Possible → Calf Alive/Dead → Assisted Extraction

Abnormal presentation, position, and posture → Correction → Guidelines for Assisted Extraction → Extraction Not Possible → Calf Alive/Dead → No Progress within 30 min → Call Your Veterinarian

(Adapted from Schull and Ball, 1980)

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How to Build & Monitor Effective Teams?



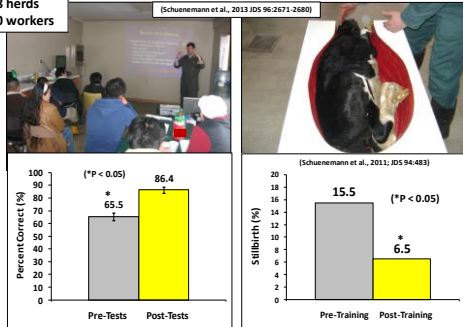
How Hard to Pull?

■ **Nerve damage** due to excessive use of force!



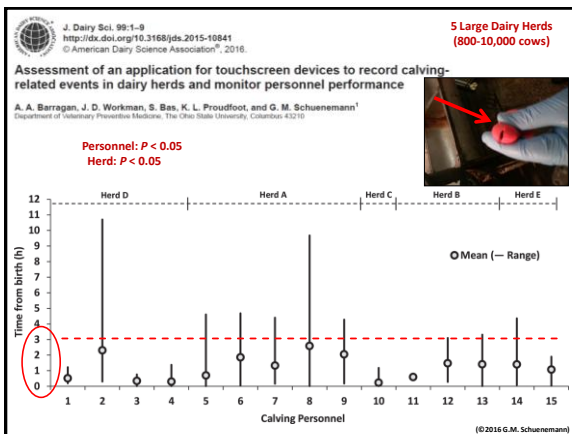
Effect of Calving Training on Personnel Knowledge

• 18,000 cows
• 18 herds
• 70 workers









Milk is 87% Water ... Does the Diet Matter?



(©2016 G.M. Schuenemann)

Dietary Cation-Anion Difference:

DCAD (mEq) = (Na + K) - (Cl + S)

Prefresh: -15 to -20 mEq/100g DM

Fresh: +25 to +40 mEq/100g DM

pH		7.14	
Hardness	(ppm)	1561.49	
Hardness	(mgains/gal)	91.32	
		(ppm)	meq/l
Calcium	(Ca)	388.80	19.40
Magnesium	(Mg)	141.20	11.61
Potassium	(K)	6.47	0.17
Sodium	(Na)	99.18	4.31
Iron	(Fe)	5.29	
Total Alkalinity	(CaCO ₃)	319.00	
Carbonate	(CO ₃)	0.00	
Bicarbonate	(HCO ₃)	389.24	6.38
Hydroxide	(OH)	0.40	
Chloride	(Cl)	32.34	0.91
Sulfur as	(SO ₄)	1514.70	31.54
Salt Concentration	(TDS)	1644.80	
Boron	(B)	0.28	
Manganese	(Mn)	0.304	
Copper	(Cu)	0.096	
Zinc	(Zn)	0.398	
Aluminum	(Al)	< 0.200	
Cation/Anion Ratio			0.91
NO ₃ -N (ppm)		0.49	
NO ₂ -N (ppm)		< 0.10	

Example: Cation-Anion Balance with Same Water and Two Different Diets

DRY Cow Diet					
 → Calving ↓  →	Mineral	Water, mg/L	Diet, %	DCAD	Goal (mEq/100g DM)
	Na	99	0.25	-53.04	-15 to -20
	K	6.47	1.5		
	S	1514	0.36		
	Cl	33	1.1		
FRESH Cow Diet					
	Mineral	Water, mg/L	Diet, %	DCAD	Goal (mEq/100g DM)
	Na	99	0.42	-0.67	+20 to +40
	K	6.47	1.3		
	S	1514	0.2		
	Cl	33	0.3		

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Calving



(©2016 G.M. Schuenemann)

Potential Calving-Related Problems

- ↑ calcium loss in pre-fresh cows
- ↓ DM Intake
- ↑ Negative Energy Balance
- ↑ Ketosis and diseases (e.g., Metritis)
- Performance: ↓ Milk and ↓ Reproduction
- ...

(©2015 G.M. Schuenemann)

Management of Maternity Pen

Prefresh: Free-stall barns (cow move → "water bag")

Parturition: ~20 m² for 24 h and colostrum harvested within 3 h

Fresh: after 24 h cows are moved into free-stall barns (by parity)



(©2016 G.M. Schuenemann)



Management of Maternity Pen

Mark High Risk Cows: **Dystocia "D"**, **"RF"**, and **Birth of Twins "T"**

Clip Tail (all cows) and oral calcium (Lact ≥3; Drench or Bolus; 75 g Ca)

Take care of calf (colostrum)

Key Factors Influencing Passive Transfer

- **Quality**
 - >50 mg/mL IgG (50 g/L)
- **Quantity**
 - At least 4 L (>9 L rule: 35g/L)
- **Timing**
 - 4 L within 3 hours
- **Clean and sanitation**
 - Minimal bacterial load



(©2016 G.M. Schuenemann)

Monitoring Colostrum Quality



J. Dairy Sci. 97:3838–3844
<http://dx.doi.org/10.3168/jds.2014-7939>
 © American Dairy Science Association®, 2014.

Evaluation of a Brix refractometer to estimate serum immunoglobulin G concentration in neonatal dairy calves

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¹Department of Population Medicine, University of Guelph, Guelph, ON N1G 2W1, Canada
²Department of Veterinary Microbiology, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 5B4
³The Saskatoon Colostrum Co. Ltd., Saskatoon, Saskatchewan, Canada S7N 5B4



Parameter	Brix (%)	IgG	Reading at
Colostrum	≥22	≥50 g/L	68 °F/20 °C (Sample & Instrument)
STP	≥8.4	≥5.5 g/dL	

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J. Dairy Sci. 94:336–341
 doi:10.3168/jds.2010-3170
 © American Dairy Science Association®, 2011.

A prospective study of calf factors affecting first-lactation and lifetime milk production and age of cows when removed from the herd¹

A. J. Heinrichs² and B. S. Heinrichs
 Department of Dairy and Animal Science, The Pennsylvania State University, University Park, 16802

Risk Factors for Lifetime Performance of Replacements:

- Each unit of calving difficulty: **-195 kg** ($P=0.05$)
- Weaning age: **-463 kg** ($P=0.02$)
- Days ill: **-126 kg** ($P<0.01$)
- Wean DMI (for every 1 kg DM): **+286 kg** ($P=0.02$)

...

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High Risk Scenario: Have very Motivated Workers, BUT without “K” and “S”

Worker Performance

$$P = (K + S) * A$$



Knowledge

Skills

Attitude

(©2016 G.M. Schuenemann)

Gustavo M. Schuenemann
Email: schuenemann.5@osu.edu; Ph: 614-292-6924

THANK YOU!

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Målstyring

Læs om målstyring og hvordan værktøjet bruges.

Hvad er Målstyring?

Målstyring hjælper bedriften med at styre efter konkrete mål og nå målene.

Styring kan ikke alene ske med historiske tal, som en årsrapport eller data fra databasen med rullende 12 mdr. gennemsnit. Målstyring handler om at styre og lede en bedrift på basis af helt aktuelle mål og resultater.

Nedbrydning af mål

Start med at sætte mål for bedriften som helhed. Fx at dækningsbidraget skal være på 10.000 pr.ko med udgangspunkt i budgettet.

Disse overordnede mål nedbrydes nu til mere specifikke mål, til fx bedre sundhed hos køerne og sidst til individuelle mål, som kan følges op på løbende, fx tiltag, der reducerer mælkefeber. Ved at nedbryde målene til operationelle mål sikrer lederen, at den enkelte medarbejder arbejder på at opfylde mål, som er relevante for hele bedriften, og som den ansatte har indflydelse på.

Skal være på dags- eller ugebasis

Målene skal nedbrydes til en så kort tidshorisont, at medarbejderne kan relatere sig til tallene. De skal kunne se effekten af handlinger i går og i dag. Så bliver det muligt at motivere medarbejderne ved tavlemøderne, og de vil gøre en ekstra indsats for at nå målene. Husk også, at medarbejderne sagtens kan være ansvarlige for et mål. Det vil medvirke til at give dem ejerskab. Husk dog at starte med et mål, de har indflydelse på, og som de kan opnå.

Status skal hænges op

Det er vigtigt, at målene – og den aktuelle status på målene - er synlige for alle på bedriften. Hvordan man gør dem synlige er imidlertid ikke væsentlig, bare det er på en måde, der fungerer og motiverer på den enkelte bedrift.

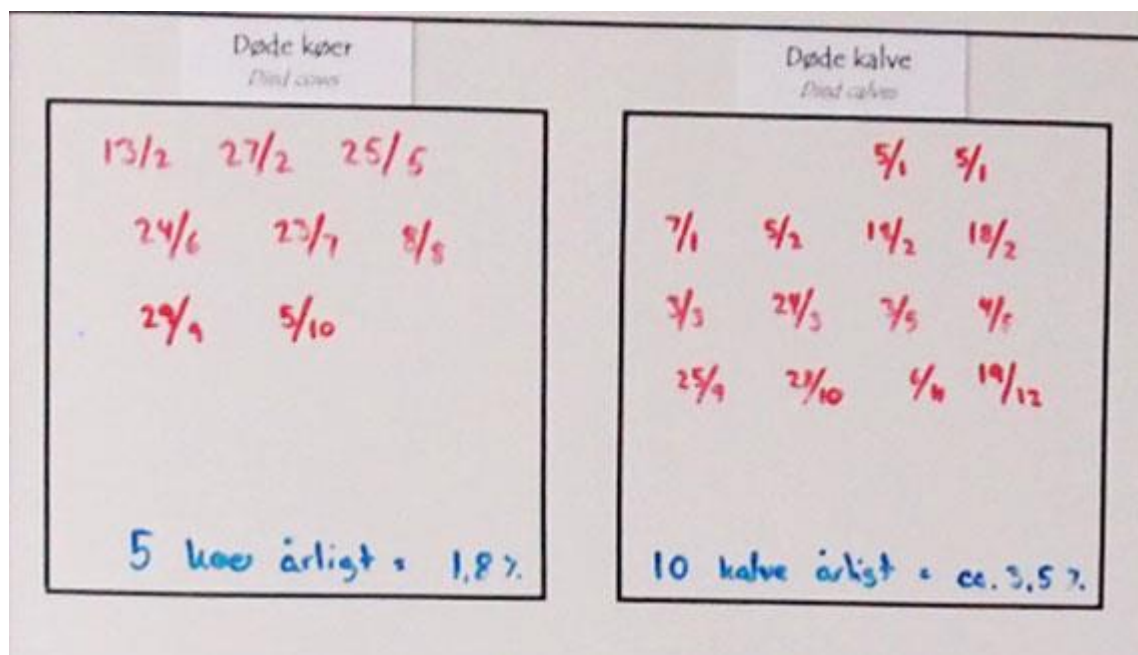
Man kan fx bruge udskrifter fra forskellige managementværktøjer, fx dyreregistrering, KMP (kritiske målpunkter) og/eller i kombination med håndholdte udskrifter i excel eller håndskrevne diagrammer på tavlemøder.



Eksempler til inspiration

Oversigt over "døde køer" og "døde kalve"

Den dag, der dør en ko, skriver man datoen på en tavle eller et stykke papir på opslagstavlen. Når der er gået et år, og man dermed kommer forbi datoen, fjerner man "datoen" på tavlen. På den måde kan alle tydeligt se, hvor mange køer, der er døde det seneste år, og hvornår på året, de er døde. Og det bliver en sejr hver gang man skal fjerne en.



KMP

Der kan også hentes et overblik over bedriftens vigtigste nøgletal via KMP på oversigtsiden. Her kan man printe overblikket (status) og de enkelte rapporter ud, og bruge dem, når der afholdes tavlemøde.

Har man en skærm tæt på tavlemøderne, kan man bruge den til at vise status på målene.

KRITISKE MÅLEPUNKT /EG						
Emne	Status	Nøgletal (enhed)	Opnået	Alarmgrænse	Opgørelsesperiode	Opdateret
Mælk	✓	Mælk leveret (Kg/dag)	9.577	Min 9.173	Seneste afhentning	07-01-14
	✓	Mælkekvalitet (Antal anmærkninger)	0		Seneste målinger	05-01-14
Reproduktion	✓	Insemineringer på køer (Antal)	9	Min 8	Seneste 7 dage	08-01-14
	✓	Insemineringer på kvier (Antal)	2	Min 2	Seneste 7 dage	08-01-14
	✓	Ikke drægtighedsundersøgte køer (Antal)	0 (1)	Maks 0	Seneste døgn	08-01-14
	✗	Ikke drægtighedsundersøgte kvier (Antal)	3	Maks 0	Seneste døgn	08-01-14
Sundhed	✓	Sygdomstilfælde, køer (Antal)	4	Maks 5	Seneste 7 dage	08-01-14
	✓	Nyinfektion, laktation (%)	17	Maks 18	Seneste Y. kontrol	03-12-13
	✗	Nyinfektion, goldperiode (%)	23	Maks 18	Seneste Y. kontrol	03-12-13
	✓	Fede goldkøer (%)	20	Maks 20	Seneste huldvurdering	03-01-14
	✓	Døde dyr (Antal)	0	Maks 0	Seneste 7 dage	08-01-14
Fodring	✓	Energiudnyttelse (%)	99	Min 93	Seneste F. kontrol	02-12-13
	✓	Mælk minus foder (Kr/Kg EKM)	2,28	Min 1,60	Seneste F. kontrol	02-12-13

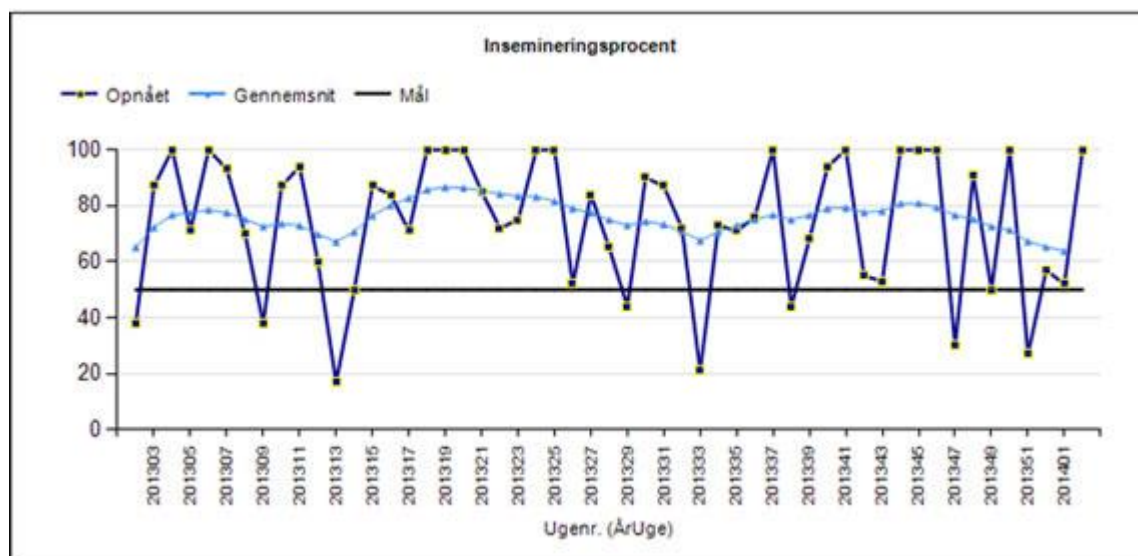
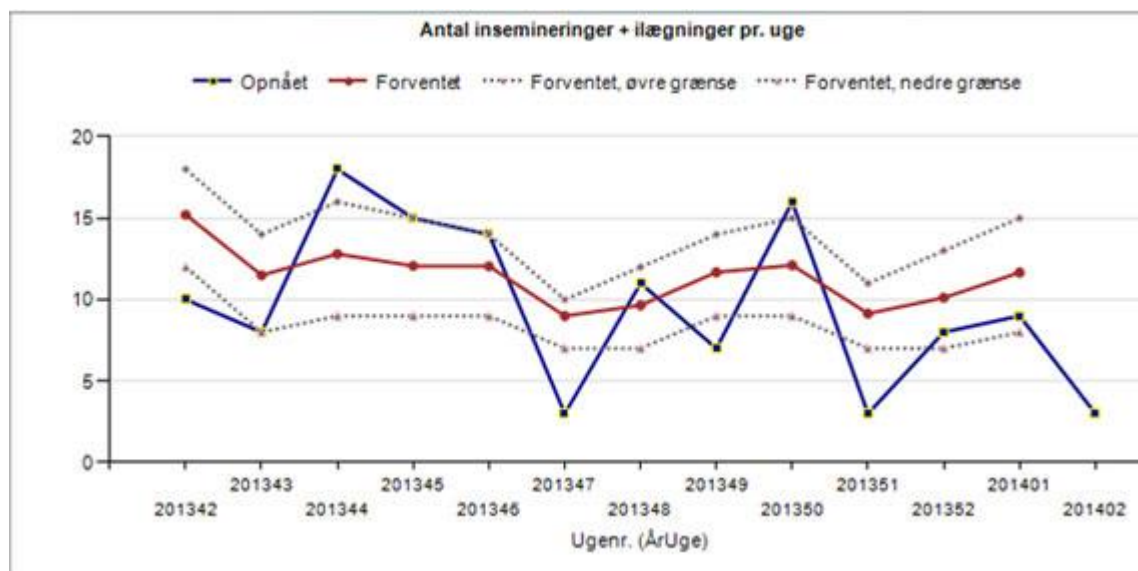




Diagram over insemineringer

Inseminering – opsummering af opnået pr uge

Pr. uge	Pr. mdr.	Opnået	Status
17	73	15	-2
17	73	17	-2
17	73	20	+1
17	73		



Metoden er enten manuel eller automatisk (KMP). Øverst er den manuelle, hvor du beregner hvor mange insemineringer, I skal foretage hver uge, for at nå jeres mål for antal drægtige dyr. I følger antallet hver dag, uge eller måned. Hvis I kan se, at antallet ligger under målet, så kan I skærpe indsatsen for at få flere i ugen efter. Det er en simpel beregning, som ikke skal kompliceres af detaljer.

Automatisk beregning som viser det opnåede antal insemineringer i forhold til det forventede sker på de nederste 2 billeder i KMP. Alle har mulighed for at se disse data i det nye DMS Dyreregistrering.

Formålet er at give et hurtigt overblik over, om det går efter planen. Det kan motivere medarbejderne i forhold til at lave brunstkontrol, hvis de kan se "resultattavlen" hele tiden.

Diagram over behandlinger i klovboks

Køer i klovboks – opsummering af opnået

Pr. uge	Pr. mdr.	Opnået	Status
20	80	15	-5
20	80	25	0
20	80		
20	80		

Metoden er, at I sætter et mål for, hvor mange køer, I vil have gennem klovboksen hver uge. Hvis der ikke er nok i en uge, som det er relevant for, eller I har så travlt, at I ikke når dem alle, tager I nogle flere ugen efter for at nå målet.

Formålet er at holde niveauet på plads, så forebyggelse af klovproblemer ikke bliver skubbet i baggrunden på grund af travlhed eller manglende fokus.

Diagram over celletal

Celletal – Grafisk og mere synlig daglig måling

Celletal, Kim og Sporer fra KMP

Metoden er enten manuel eller automatisk i KMP. Den manuelle er et excel regneark, hvor det daglige celletal indtastes. Grafen dannes derefter automatisk. Du kan lave en udskrift hver uge til tavlemødet, så alle kan se, hvordan det går. Hvis du i en periode vil have ekstra fokus på celletallet, så kan du gøre det dagligt eller lade figuren danse på en fladskærm ved staldkontoret.

Den automatiske løsning findes i KMP, hvor man følger celletallet dagligt og se udviklingen 18 måneder tilbage. Dette kan også printes ud til ugemødet.

Formålet er at gøre målstyringen mere synlig og tydelig. Der er meget forskel på en dynamisk grafisk illustration og en stabel sedler, der hænger i tankrummet.

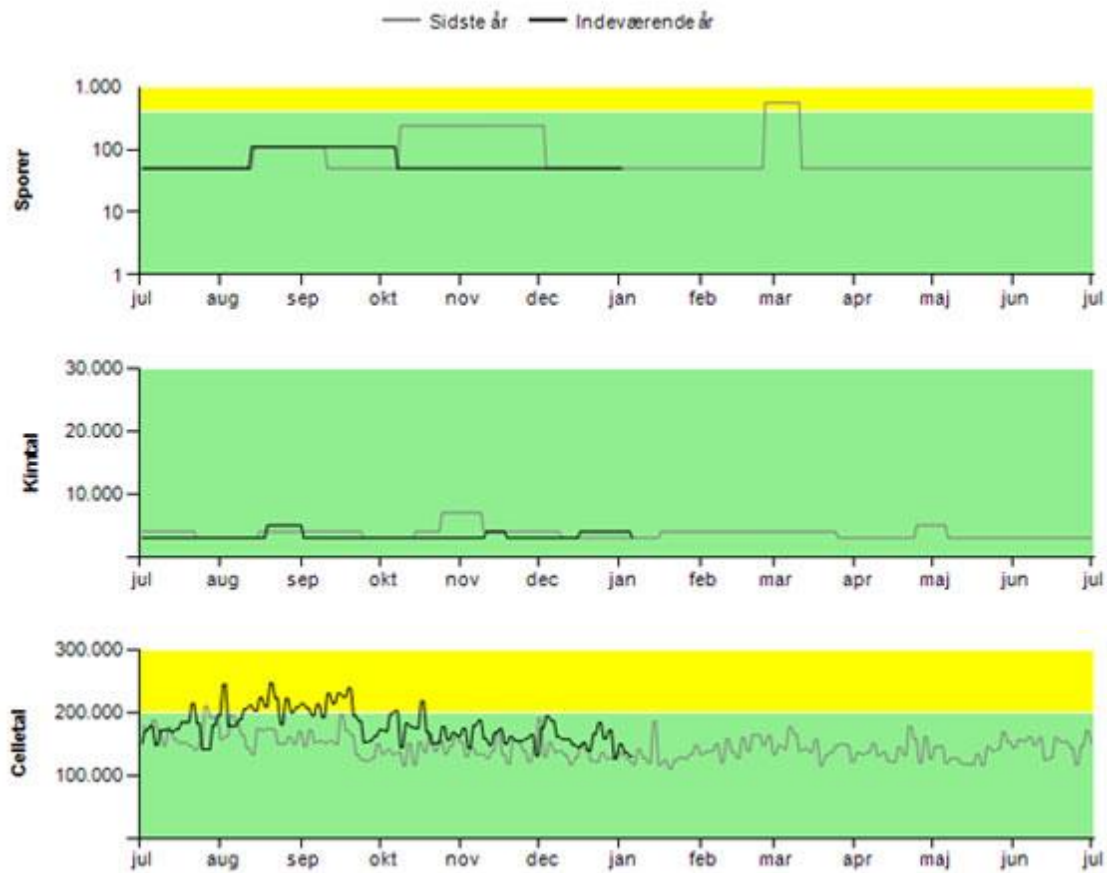
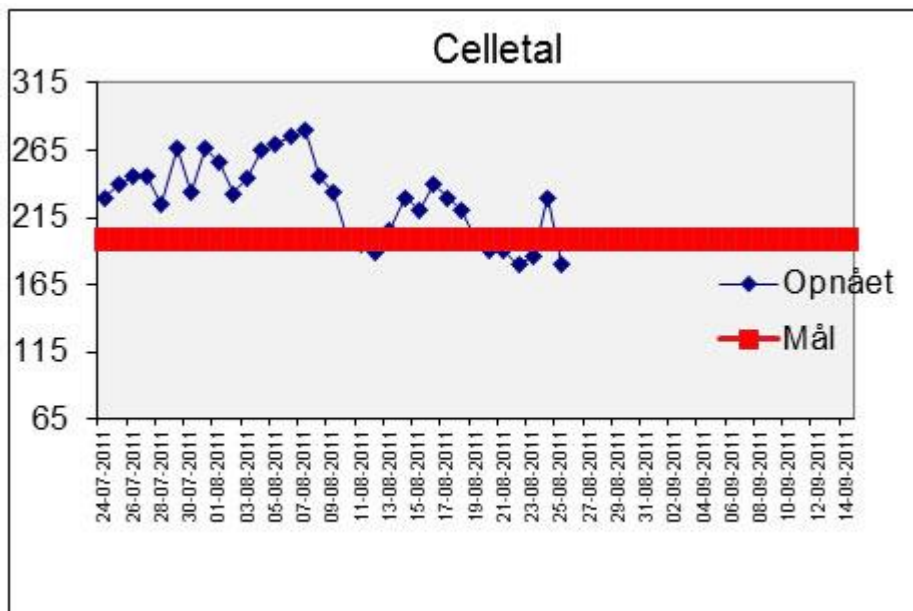


Diagram over leveret mælk

Mælkeproduktionsprognosen - synliggørelse

Metoden vist her er fra KMP hvor forventet leverance fra prognosen vises i forhold til den opnåede mælkeydelse. Grafen dannes automatisk og indeholder mælkeleverancer de seneste 6 måneder.

Formålet er at gøre målstyringen mere synlig og tydelig. Der er meget forskel på en dynamisk grafisk illustration og en udskrift med tal. I eksemplet blev der gjort en stor indsats oktober og november og det var meget motiverende at følge kurven.

Kurven kan hentes automatisk i KMP med planlagt levering og opnået levering vist.

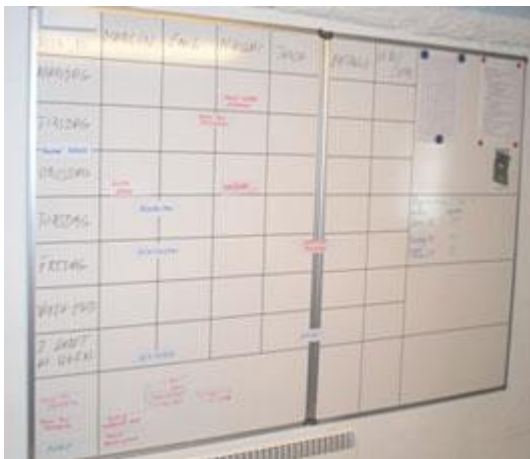


Hvad er forbedringstavlen og tavlemøde?

Forbedringstavlen er et værktøj til at opnå en virksomhedskultur med løbende forbedringer (det femte Leanprincip).

Formålet med forbedringstavlen

- Den positive dialog
- Inddrage medarbejderne
- Synlige mål og resultater
- Forbedringskultur
- Synlig ledelse
- Team-ånd



Målingstyring af fokusområder

Forslag til forbedringer

Prioritering

- Straks
- Snart
- Senere
- Spring over

**Hvem gør
hvad?
Og hvornår?**

Forbedringstavlen anvendes sammen med [Weekplanner](#) f.eks. på et ugentligt mandagsmøde. Mødet er kort (maks. 15 min), folk står gerne op omkring tavlen(erne) og der er en fast dagsorden som den ansvarlige leder styrer efter.

Struktur ved det ugentlige tavlemøde

- Korte møder
- 15-20 min. hver uge
- evt. 3 min. hver dag
- Stående møder
- Alle står rundt om tavlen
- Dagsorden
- Fast og kendt

Tavlen er delt i fire felter

1. Mål for fokusområder:

Her noteres bedriftens mål, f.eks.:

- Ydelse på 11.000 kg
- Kalvedødelighed på 2 %
- Celletal på 220.000.

Den aktuelle tilstand for de forskellige mål noteres også.

2. Forslag til forbedringer:

Forbedringsforslag skrives på her i løbet af ugen.

Ofte opstår gode forslag ved diskussionen af de aktuelle mål. De noteres også her.

Forslagene gennemgås en gang om ugen.

3. Prioritering:

- Straks
- Snart
- Senere
- Spring over

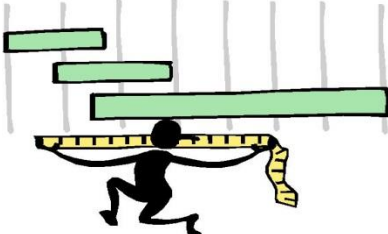
4. Hvem gør hvad hvornår:

Når dette område er udfyldt er ingen i tvivl om ansvarsfordeling og tidsfrister.

Den positive dialog

- Alle forhold har en god og en dårlig side – også fejl: *Hvad kan vi lære af fejlen?*
- Vend hurtigt negativt til positivt: *Hvad kan jeg gøre bedre?* i stedet for "Han glemte at gøre..."
- Lejlighed til at rose: *"Super, at du opdagede den syge ko"*
- Undgå altid ironi og sarkasme
- Hvis nogen skal kritiseres, så gør det på 2-mands hånd

5 faste punkter på dagsordenen	Indhold
1. Planlægning 	• Planlægning af den kommende uge • Hvad der ligger ud over faste opgaver f.eks. klovbeskæring • Orienter også om andre ting på gården f.eks. Vi skal snitte græs på torsdag • Mads skal til tandlæge på onsdag, og Lisbeth har fødselsdag og giver kage i morgen. Brug

	WeekPlanner
2. Hvad gik godt sidste uge 	• Alle skal nævne mindst én ting • Vi fik 3 kalve, der alle er friske • Jonas opdagede, at kablet var i stykker • Solen og varmen kom • Hjælp dem lidt på vej, hvis de ikke selv kan finde på noget
3. Resultater 	• Sæt nogle tydelig og målbare mål • Skal helst være korttids, så man kan se en udvikling f.eks. celletal dagligt, mælk leveret, levende fødte kalve • Gør et nummer ud af det, når det går godt • Sørg for, der er noget positivt at sige hver gang
4. Gode ideer, forbedringsforslag 	• Alle skal komme med noget • Alle forslag skal tages seriøst • Gule sedler med forslag • Prioritering • Fordeling af ansvar • Opfølgning
5. Opfølgning 	• Fasthold og hold fast • Vær konsekvent • Spring ALDRIG over • Skab en forbedringskultur