TINE RÅDGIVING

TINE Rådgiving

ISO TS 34700 Animal welfare management – General requirements and guidance for organizations in the food supply chain; Experiences on their use.

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TINA SA

A dairy cooperative company in Norway
95 % of milk producers deliver milk to TINE SA
TINE SA has 79 % market share on milk usage

Norway has 7800 dairy herds
220,000 dairy cows
Herd size is now 27 cows per herd
Milk yield per cow is 8,200 kg ECM

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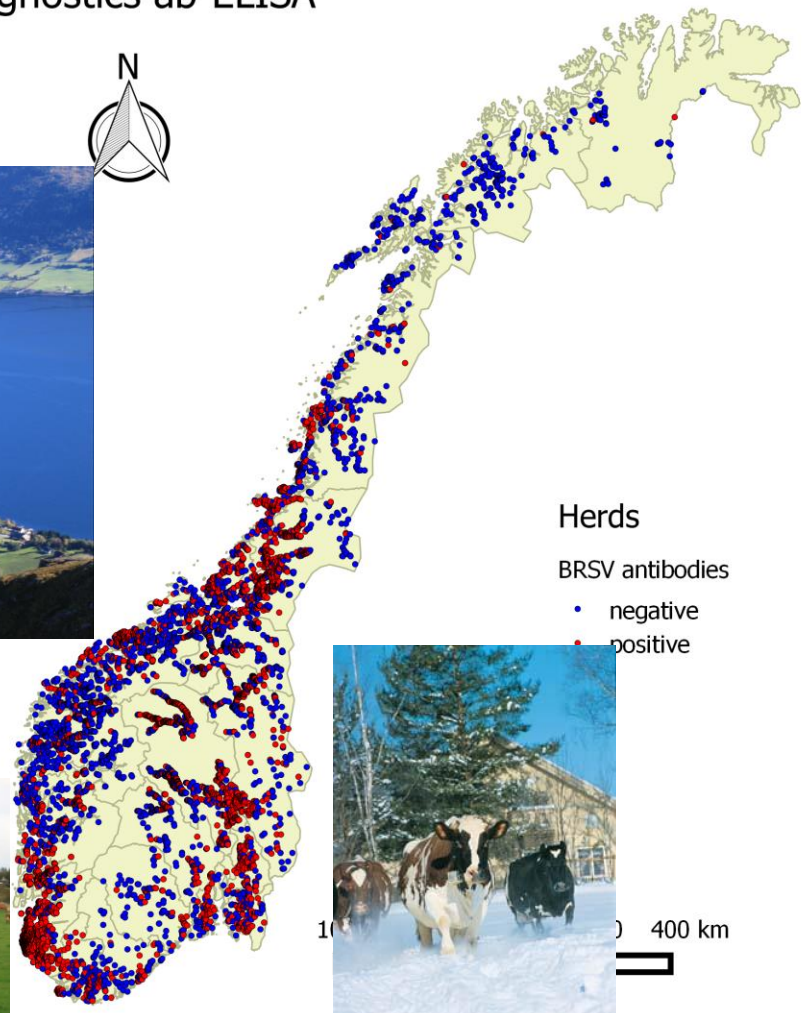
BRSV antibodies in bulk tank milk based on MV-diagnostics ab-ELISA



About my-self

- Employed by **TINE SA 1987-2007** and **2011 till now**
- Have been manager of the Norwegian Cattle Health Services and the last two years mainly worked with animal welfare in dairy cattle
- Engaged in **IDF (International Dairy Federation**) 1987-2007 and 2011- now)
  - Member of SPCC 2012-2016
  - **Chair of SCAHW 2016-2018 and 2018 – (2020)**
- Fulltime **professor** in preventive medicine and health management at the School of Veterinary Science in **Oslo 2007-2011**
  - Main advisor for 10 PhD students main working on data from the animal recording (dairy)
- **Part time professor (20 %)** at the Vet.School in Oslo 1998-2007 and 2011-2014
- Study leave at **University of Guelph; Canada** 1996/97. **Epidemiology and statistics**
- Department manager (mastitis) at the **National Veterinary Institute in Oslo** 1985-1987
- District State veterinarian with **practise in cattle, goats and sheep 1982-1985**
- Veterinary lab 1978-1982 – with a **Dr.scient** from the Vet.School, **Oslo in 1982**
- Military force, lecture in prevention of **ABC-war-fare** 1977/78
- **Private practice 1977**
- **DVM, Oslo 1976 December**

The Norwegian Animal Recording

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ICAR CERTIFICATE OF QUALITY Exp. 05/2020

Husdyrkontrollen

Recording animals

Mjølkeproduksjon
- Mengde
- Analyser

Kalving
- Kjønn
- Anvendelse

Reproduksjon
- Brunst
- Inseminering
- Drektighet

Fôring
- Fôrslag
- Mengde

Holdvurdering

Helseregistreringer
- Sykdom og behandlinger

Klauvregistrering
- Klauvskjæring
- Klauvsykdommer

Data source

Produsenter
- Mjølk, kr.fôr, produksjon

AMS
- Import
- Eksport

Rådgivere
- Mjølk, kr.fôr, produksjon

Regnskapskontor
- Regnskapsdata til Mjølkonomi
- Landbrukets Dataflyt

Råvaretorget
- Meierileveranser

Fôrsystemer
- Fôrslag / mengde

Storfe-databasen

Råvarelaboratorier
- Mjølkeanalyser

Klauvskjærere
- Klauvregistreringer

Mastittlaboratoriet
- Speneprøveanalyser
- Smitte/sykdom

geno
- Avlsverdiberegninger
- Semindata
- Genomiske data

Slakterier
- Slaktevekter
- Klassifiseringer

Dyrehelseportalen
- Helseregistreringer

Reports and statistics

Periodiske rapporter og statistikker

TINE Bedriftsstyring
- Styring og planlegging
- Prognoser og oppfølging
- Rapporter og overvåking
- Fôrplaner

KK oppdrett/kjøtt

geno Avlsorganisasjoner

TINE Dokumentasjon; «Kanskje verdens fineste melk»

Myndigheter og forvaltning
- Overvåking
- dokumentasjon

Forskning
- Data til forskningsprosjekt

Landbrukets Dataflyt
- Dyrestatus

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ard

HELSETJENESTEN FOR STORFE

Helsekort ku

Fylke Kommune Gard

Podusent-nummer

Føres av eier/rokter	Sjukdomsregistrering															Kuas avstamning	Registrert av veterinær nr. event. andre = 9997 eier = 9999	For Husdyr-kontrollen
	Fødsel/fruktbarhet					Produksjonssjukdommer												
	Tilbakeholdt etterbyrd	Berbetennelse	Eggstokkcyster	Brunst/omløp		Mjølkefeber	Ketose	Indigestion	Spenesår	Klinisk mastitt: Alvorlig/moderat	Klinisk mastitt: Mild	Andre sjukdommer og forebyggende behandling (se kodeliste)		Type behandling		Mors nr. og navn		
Kalving	326	333	334	331, 340, 341		366	385	260	306	303	304					Fars nr. navn		
År	Dato	Dato	Dato	Dato	Dato	Kode	Dato	Dato	Dato	Dato	Dato	Dato	Dato	Kode	Kode	Merknader om symptomer, behandling m.v.	Dato	Innrapp. Dato

Føres av eier/rokter	Sjukdomsregistrering															Kuas avstamning	Registrert av veterinær nr. event. andre = 9997 eier = 9999	For Husdyr-kontrollen
	Fødsel/fruktbarhet					Produksjonssjukdommer												
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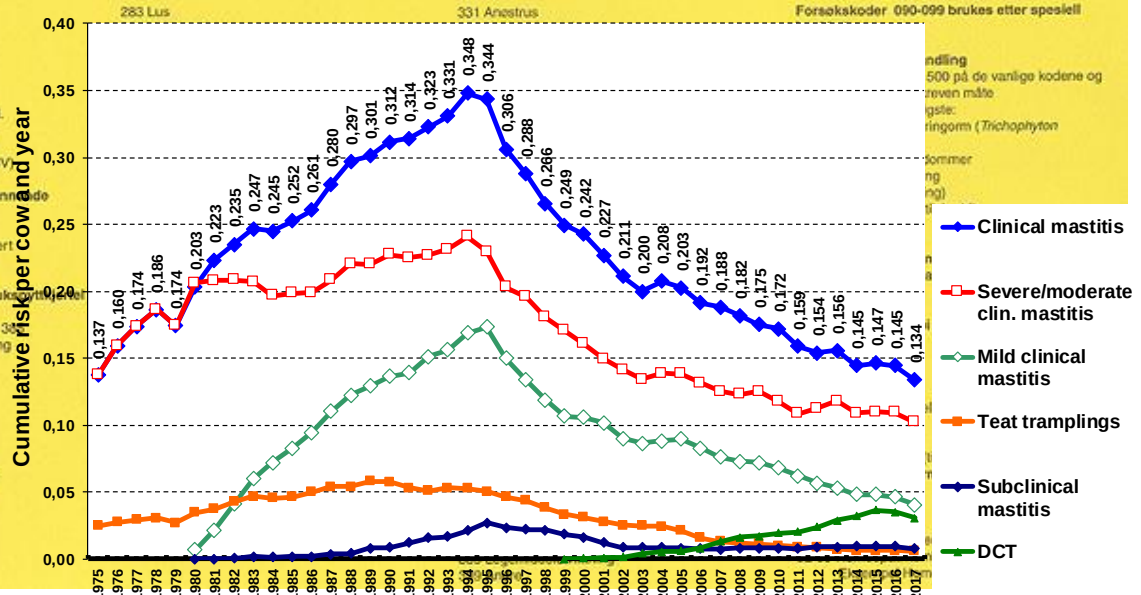
Kalving	326	333	334	331, 340, 341		366	385	260	306	303	304					Fars nr. navn		
År	Dato	Dato	Dato	Dato	Dato	Kode	Dato	Dato	Dato	Dato	Dato	Dato	Dato	Kode	Kode	Merknader om symptomer, behandling m.v.	Dato	Innrapp. Dato

Fødselsår og dato ____ Ku

Kodeliste for sjukdommer (B-sjukdommer noteres på Helsekort Buskap og rapporteres på foreskreven måte)

Infeksjonssjukdommer
211 Listeriose
215 Ondartet katarrfeber
218 Pasteurellose
221 Sjodogg
239 Piroplasmose
242 Kopper og koppelignende sjukd.
243 Miltbrannsemfysem
245 Smittsom diaré (f.eks. Corona)
246 Smittsom luftveisinf. (f.eks. BRSV)
249 Andre
Brysthuleorganer, blod og bloddannende organer
250 Hjerte-/karsjukdommer
251 Luftveissjukdommer - uspesifisert
252 Lungeorm
259 Andre
Fordøyelsesorganer med lever, buksp[illegible] og endokrine organer
260 Indigestion unntatt 261, 268 og 3[illegible]
261 Kolikk/leieforandring/løpedreining
262 Kvast/fremmedlegeme
265 Mage-/tarmbetennelse
266 Parasittære sjukdommer
267 Tannlidelser
268 Trommesjuke
270 Leversjukdom
279 Andre
Hud og hudorganer, inkl. klauver
280 Avhorning etter skade o.l. (regulær avhorning 780)
281 Forfangenhet
282 Klauvlidelser unntatt 281

283 Lus
331 Anestrus
Forsøkskoder 090-099 brukes etter spesiell



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Activity on Animal Welfare in International Organisations

- IDF/OIE (2008): ***'Guide to Good Animal Welfare in Dairy Production', revised in 2019***
- IDF/FAO (2009): **'Guide to Good Dairy Farming Services'**
- Science and society improving animal welfare, Lelystad, The netherlands (2009): **'Welfare Quality® -Assessment protocol for cattle. (142 pages)**
- EU/EFSA (2015): '***Scientific Opinion on the assessment of dairy cow welfare in small-scale farming system***' (small-scale up till 75 cows)
- OIE (may 2016): '***Animal Welfare in Dairy Cattle Production Systems'***
- ISO (nov. 2016): ***'Animal Welfare Management – General Requirements and Guidance for Organizations in the Food Supply Chain'***

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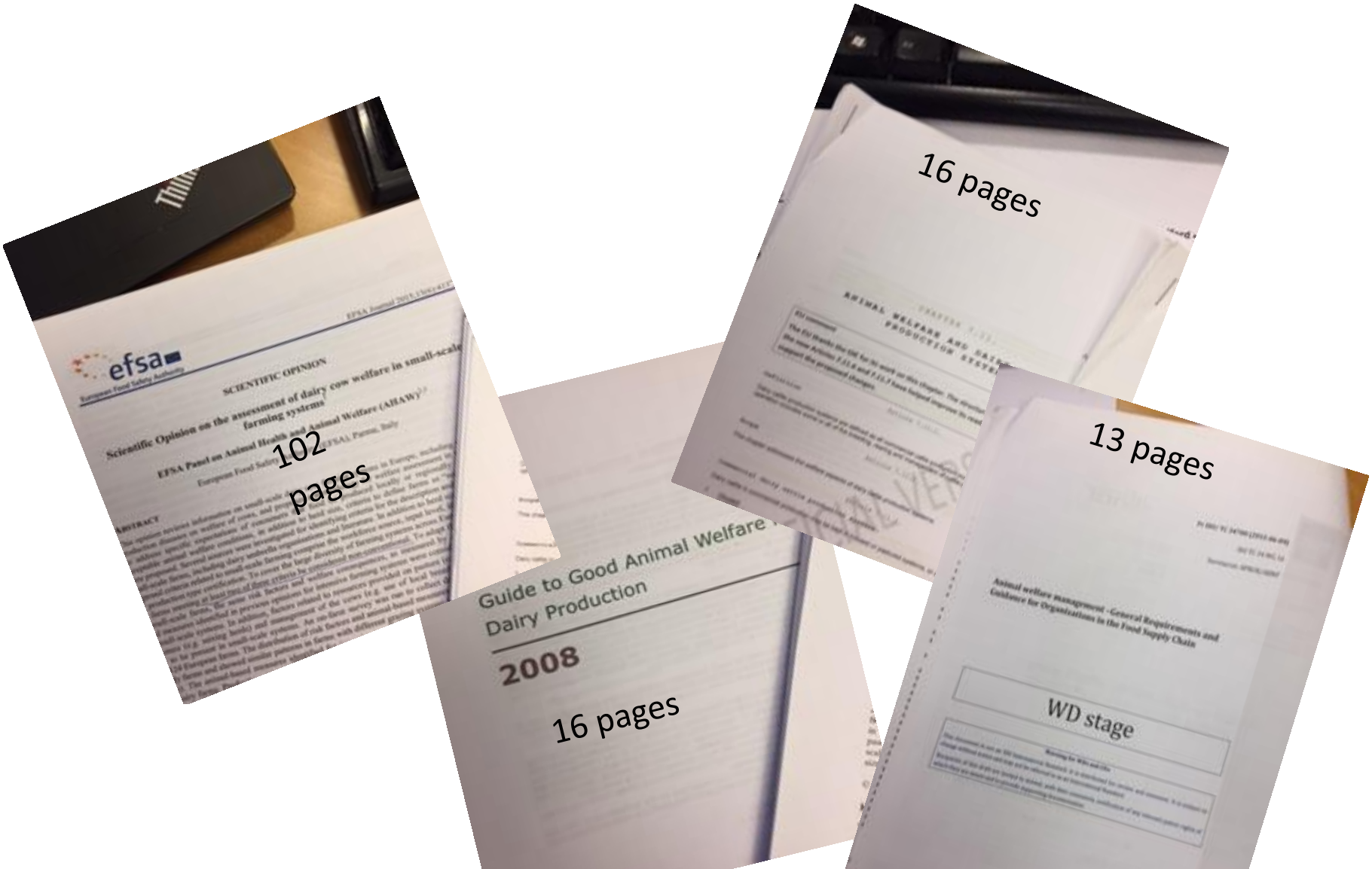
IDF work give input from OIE and ISO process



What happens in different countries?

Canada:
Farmers visited in relation to food safety and this visit also relates to animal welfare

Japan:
Make recommendations for animal welfare

South-Africa:
Follows the IDF guideline for animal welfare

Israel:
Harmonizing assessment of animal welfare throughout the country

Denmark:
Animal welfare indeks developed and presented in 2017

France:
Sveral private initiatives for private standards, also official recommendations

Example from other countries

Växa, Sweden: Ask the cow

Example from other countries

Australia from the sustainable report.

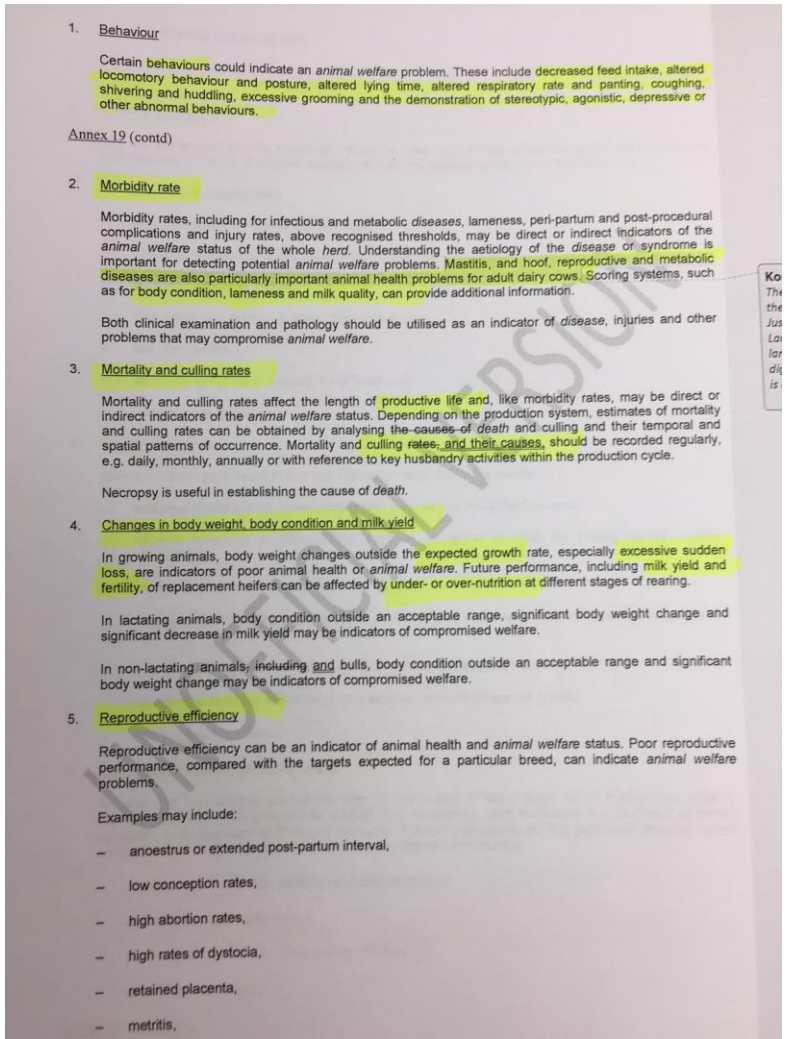
7.1	All industry complying with legislated Animal Welfare Standards					100%	
	Awareness of new Animal Welfare Standards	56%	56%	-	47%	100%	
7.2	All of industry adopting relevant recommended industry practices:					100%	
	Reduce use of routine calving induction	80%	80%	88%	90%		
	Don't dock tails	80%	85%	-	91%		
	Disbud prior to 2 months of age	57%	63%	-	63%		
	Have a lameness strategy	87%	95%	-	95%		
	Have cool infrastructure	94%	98%	-	92%		
	Bobby calves fed within 6 hours prior to transport	97%	97%	-	96%		
7.3	Public recognition of caring for animals	60%	62%	59%	58%	75%	

What are we doing in Norway?

- First dairy animal recording in 1898
- First animal protection act in 1935
- The dairies had the responsibility for animal recording from 1948.
- Animal Recording to TINE from 1973.
- Health recording at national level from 1975 (after test version from 1968)
- Revised animal protection act in 1976
- Organised udder health control established in 1982
- Campaign on ‘Ethics in the cowshed’ in 1988 – study circle among lots of farmers
- Quality assurance system (KSL) for agriculture established in 1994, merged to Food Mark ‘Matmerk’system in 2007
- Cattle Health Services established in 1994
- New Animal Welfare Act in 2009/2010.
- TINE SA established a separate cow-shed visit at each farm yearly in 2011

OIE standard and outcome indicators

Lots of the indicators are in the Recording already (14)



1. Behaviour

Certain behaviours could indicate an *animal welfare* problem. These include decreased feed intake, altered locomotory behaviour and posture, altered lying time, altered respiratory rate and panting, coughing, shivering and huddling, excessive grooming and the demonstration of stereotypic, agonistic, depressive or other abnormal behaviours.

Annex 19 (contd)

2. Morbidity rate

Morbidity rates, including for infectious and metabolic *diseases*, lameness, peri-partum and post-procedural complications and injury rates, above recognised thresholds, may be direct or indirect indicators of the *animal welfare* status of the whole *herd*. Understanding the aetiology of the *disease* or syndrome is important for detecting potential *animal welfare* problems. Mastitis, and hoof, reproductive and metabolic diseases are also particularly important animal health problems for adult dairy cows. Scoring systems, such as for body condition, lameness and milk quality, can provide additional information.

Both clinical examination and pathology should be utilised as an indicator of *disease*, injuries and other problems that may compromise *animal welfare*.

3. Mortality and culling rates

Mortality and culling rates affect the length of productive life and, like morbidity rates, may be direct or indirect indicators of the *animal welfare* status. Depending on the production system, estimates of mortality and culling rates can be obtained by analysing the causes of *death* and culling and their temporal and spatial patterns of occurrence. Mortality and culling rates, and their causes, should be recorded regularly, e.g. daily, monthly, annually or with reference to key husbandry activities within the production cycle.

Necropsy is useful in establishing the cause of *death*.

4. Changes in body weight, body condition and milk yield

In growing animals, body weight changes outside the expected growth rate, especially excessive sudden loss, are indicators of poor animal health or *animal welfare*. Future performance, including milk yield and fertility, of replacement heifers can be affected by under- or over-nutrition at different stages of rearing.

In lactating animals, body condition outside an acceptable range, significant body weight change and significant decrease in milk yield may be indicators of compromised welfare.

In non-lactating animals, including and bulls, body condition outside an acceptable range and significant body weight change may be indicators of compromised welfare.

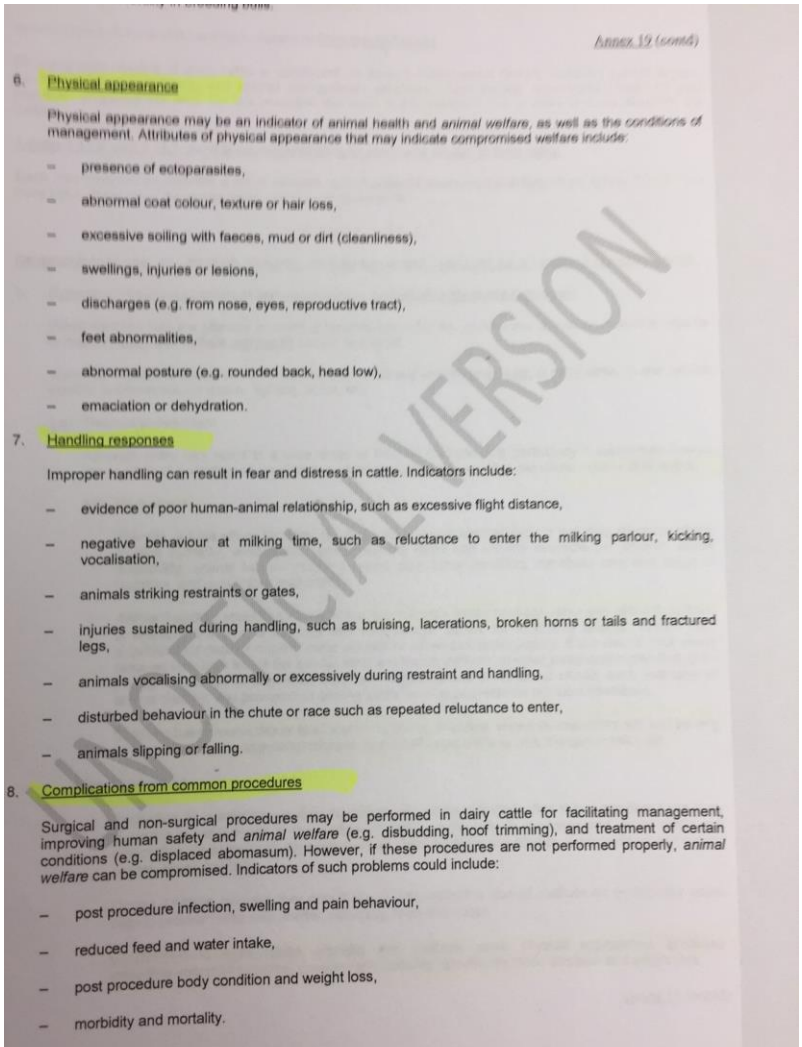
5. Reproductive efficiency

Reproductive efficiency can be an indicator of animal health and *animal welfare* status. Poor reproductive performance, compared with the targets expected for a particular breed, can indicate *animal welfare* problems.

Examples may include:

- anoestrus or extended post-partum interval,
- low conception rates,
- high abortion rates,
- high rates of dystocia,
- retained placenta,
- metritis,

But, some also need attendance in the cowshed, and a farm visit (16)



Annex 19 (contd)

6. Physical appearance

Physical appearance may be an indicator of animal health and *animal welfare*, as well as the conditions of management. Attributes of physical appearance that may indicate compromised welfare include:

- presence of ectoparasites,
- abnormal coat colour, texture or hair loss,
- excessive soiling with faeces, mud or dirt (cleanliness),
- swellings, injuries or lesions,
- discharges (e.g. from nose, eyes, reproductive tract),
- feet abnormalities,
- abnormal posture (e.g. rounded back, head low),
- emaciation or dehydration.

7. Handling responses

Improper handling can result in fear and distress in cattle. Indicators include:

- evidence of poor human-animal relationship, such as excessive flight distance,
- negative behaviour at milking time, such as reluctance to enter the milking parlour, kicking, vocalisation,
- animals striking restraints or gates,
- injuries sustained during handling, such as bruising, lacerations, broken horns or tails and fractured legs,
- animals vocalising abnormally or excessively during restraint and handling,
- disturbed behaviour in the chute or race such as repeated reluctance to enter,
- animals slipping or falling.

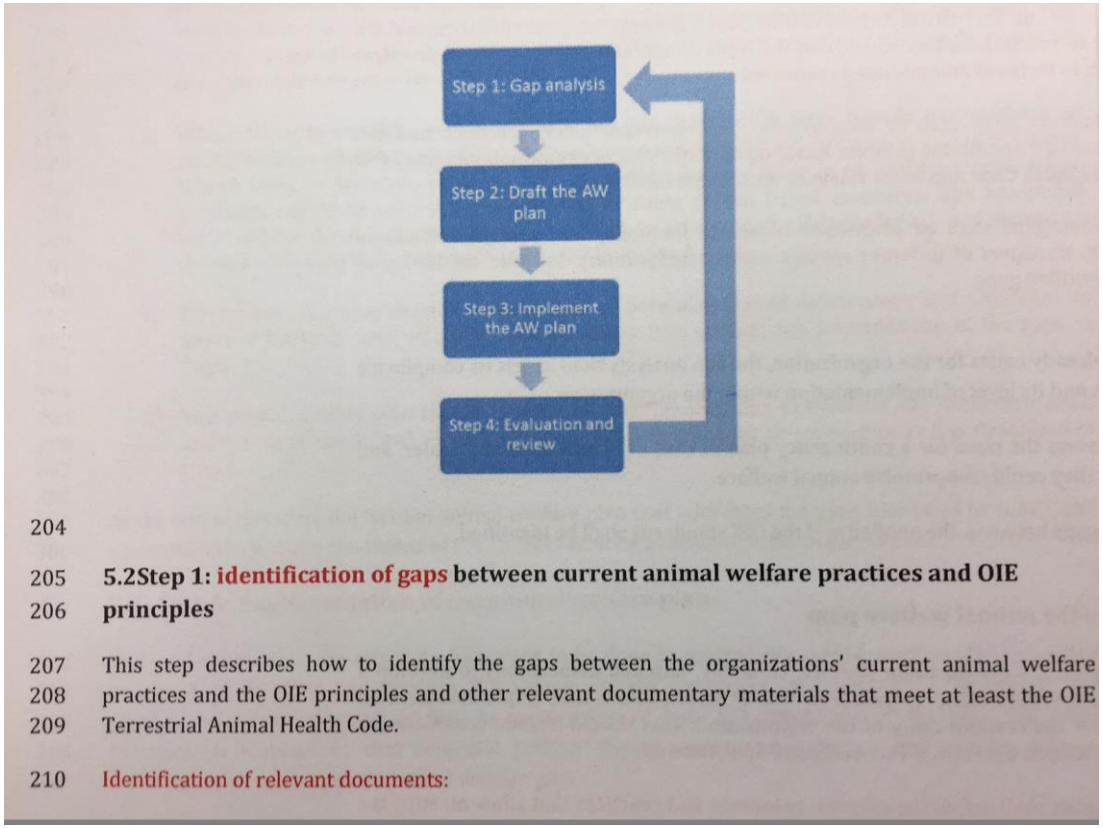
8. Complications from common procedures

Surgical and non-surgical procedures may be performed in dairy cattle for facilitating management, improving human safety and *animal welfare* (e.g. disbudding, hoof trimming), and treatment of certain conditions (e.g. displaced abomasum). However, if these procedures are not performed properly, *animal welfare* can be compromised. Indicators of such problems could include:

- post procedure infection, swelling and pain behaviour,
- reduced feed and water intake,
- post procedure body condition and weight loss,
- morbidity and mortality.

ISO sin rolle

ISO TS 34700 sets the standard for how organizations can work with animal welfare and and what demands could be set when trading food in the foodchain

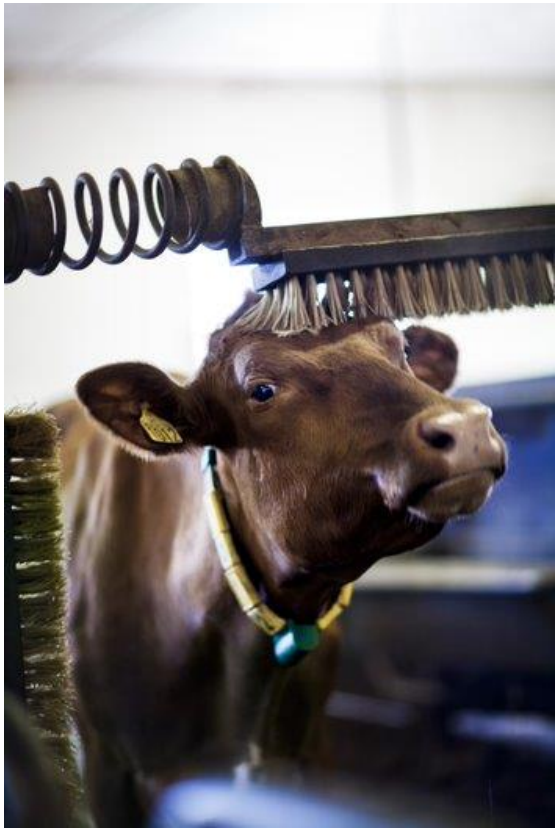


204

205 **5.2Step 1: identification of gaps between current animal welfare practices and OIE**
206 **principles**

207 This step describes how to identify the gaps between the organizations' current animal welfare
208 practices and the OIE principles and other relevant documentary materials that meet at least the OIE
209 Terrestrial Animal Health Code.

210 Identification of relevant documents:

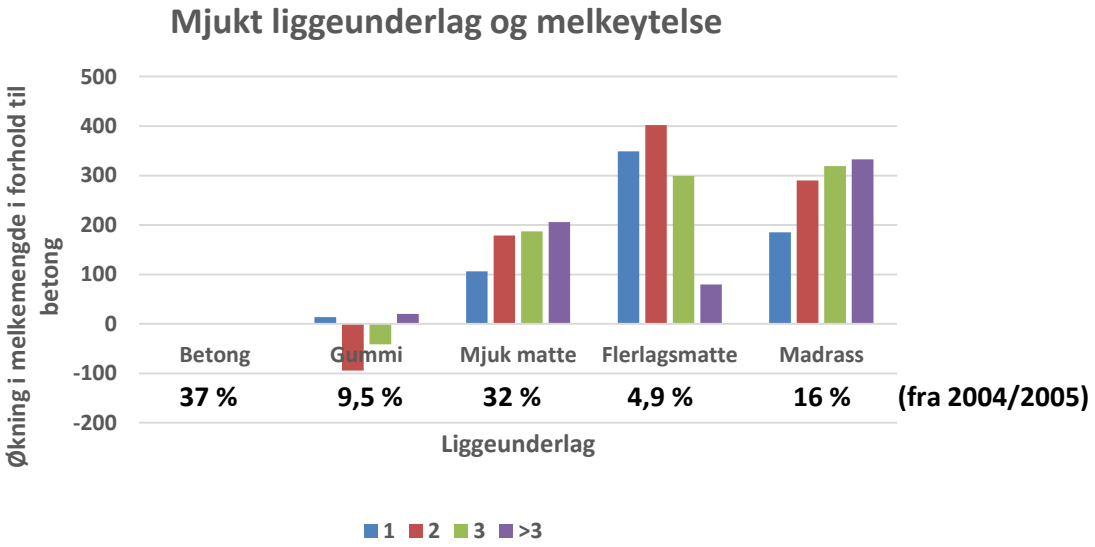


The good principle of outcome based indicators

Freedom from physical discomfort – by keeping the animals in suitable environment with comfortable laying area and shelter from weather and wind

Eksempel
Mean area (m^2 per cowyear included cubicles, walking area and crossings) in 2005 was 7,9 m^2 ± 1,8 m^2. At each square meter increase the yield of 1st parity cows increased by 38 kg milk.

Source: Geir Næss,2010. PhD



Source: Lars Erik Ruud,2011. PhD

What is good in Norwegian cowsheds in relation to animal welfare?

- Good recording and documentation on health and 95 % member of **animal recording system**
- **Disbudding** with good routines for anaesthesia, tranquilisers and pain killers. More and more pooled cattle due to breeding.
- There have **no tail docking**
- We **lack many important serious infectious diseases** – example: tuberculosis, paratuberculosis, BVD, *Mycoplasma bovis*, have so fare little digital dermatitis etc.
- Have a good **animal welfare act** which to large degree are followed
- **A structure** based on **family owned** enterprises
- **Low mortality** both in cows and calves
- We are certainly best on some points, but other point could be improved – **same as many others – its all about tradition, culture and what you prioritise**
- Key element, **how to document and how to improve** – OIE and ISO is crucial.

The TINE animal welfare indicator elements and part indicators

Klauvpleie	Har/ har ikke	Dødelighet hos kyr	Selvdøde	Fruktbarhet	Avstand KSI - FSI
Claws	Hvem har foretatt klauvskjæring	**Dead cows**	Avlivet		Kalvingsinterval
	Antall anmerkninger for DD, såleknusning og hvite linje (evt. andre med smerte)		Differanse selvdøde minus avlivet	**Fertility**	Utrangering pga. fruktbarhet
	Halthet	Avhorning	Andel kalv som er kollete	Jurhelse	Mastittbehandlinger
Kalvesjukdommer	Dødelighet	**Disbudding**	Andel avhorna som er avhorna etter 42 dager		Celletall
Calves	Kalvesjukdommer		Andel avhorna som er avhorna etter 70 dager		Utrangering pga. jurhelse
		Ungdyr	Dødelighet 180 d til 1,5 år	Stoffskiftesjukdommer	Melkefeber
			Sjukdommer		Ketose
		Young stock	Tilvekst i g /dag okse	**Methabolism**	Hold
			Tilvekst i g/dag ung ku/kvige		Slaktevekter kyr
			Innkalvingsalder		Slakteklasse
				Utrangeringer	Utrangerte (pga. sjukdom) første 14 dager i laktasjonen av alle utrangeringer
				Removals	Utrangering av drektige dyr (etter 3 måneders (84 til 290 dager) drektighet)
					Levetid etter 2.kalving
				Produksjon	Diff. 2.-1.laktasjon
				Production	Diff. >2. – 1. laktasjon
					Diff >2. – 2. laktasjon

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Details - statistics

Variable	Used mean value	Used STD	Calculations	Chosen values[3]
Milk yield indicator				
305 days milk yield in 2nd parity minus 1st parity	980	990	NSTDcont[1]	-3;3
305 days milk yield in 3rd parity minus 2nd parity	515	1015	NSTDcont[1]	-3;3
305 days milk yield in 3rd parity minus 1st parity	1491	1059	NSTDcont[1]	-3;3
Life indicator				
Proportion of cows culled the first 14 days in milk	0.064		NSTDpoi[2]	-3;3
Culled cows between 84 and 290 days in diagnosed pregnant cows	0.10		NSTDpoi[2]	-3;3
Culled inseminated/mated cows between 84 and 290 days without pregnancy test[4]	0.11		NSTDpoi[2]	-3;3
Replacement rate (proportion of 1st parity cows)	0.36	0.133	NSTDcont[1]	-3;3
Length of life for cows after 2nd parturition (days)	680	283	NSTDcont[1]	-3;3
Metabolic indicator				
Number of milk fever after 2nd parity	0.0779		NSTDpoi[2]	-3;3
Number of ketosis of all cows	0.0373		NSTDpoi[2]	-3;3
Number of thin cows (BCS < 2.75)	0.0427		NSTDpoi[2]	-3;3
Number of thick cows (BCS > 3.75)	0.1748		NSTDpoi[2]	-3;3
Variation of BCS (STD)	0.419	0.123	NSTDcont[1]	-3;3
Carcass weight cows in kg	269	30	NSTDcont[1]	-3;3
Meat classification young cows			See Table 2	
Meat classification cows			See Table 2	
Carcass weight young cows	254	28	NSTDcont[1]	-3;3
Fat classification young cows			See Table 2	
Fat classification cows			See Table 2	

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Details - statistics

Variable	Used mean value	Used STD	Calculations	Chosen values[3]
Udder health indicator				
Number of cow cell counts > 200,000 pr. ml	0.2013		NSTDpoi[2]	-3;3[5]
Cases of clinical mastitis	0.22395		NSTDpoi[2]	-3;3[5]
Number of cows culled due to bad udder health	0.0247		NSTDpoi[2]	-3;3
Fertility indicator				
Number of days from average last insemination till first insemination for each cow	27.5	24.2	NSTDcont[1]	-3;3
Average calving interval in months	12.7	1.37	NSTDcont[1]	-3;3
Number of cows culled due to bad fertility	0.1339		NSTDpoi[2]	-3;3
Young stock indicator				
Number of dead young stock	0.01652		NSTDpoi[2]	-3;3
Number of emergency-slaughtered young stock	0.001779		NSTDpoi[2]	-3;3
Number of euthanized young stock	0.003706		NSTDpoi[2]	-3;3
Number of treated young stock	0.0222		NSTDpoi[2]	-3;3
Carcass weight heifers, kg	218	38	NSTDcont[1]	-3;3
Growth rate heifers (gram per day)	342	57	NSTDcont[1]	-3;3
Carcass weight young bull kg	297	46	NSTDcont[1]	-3;3
Growth rate young bull (gram per day)	523	81	NSTDcont[1]	-3;3
Carcass weight young cow kg	254	28	NSTDcont[1]	-3;3
Growth rate young cow (gram per day)	214	31	NSTDcont[1]	-3;3
Age in months at first calving	25.8	2.2337	NSTDcont[1]	-3;3
Dehorning indicator				
Number of dehorning after 42 days of life	0.35		NSTDpoi[2]	-3;3
Number of dehorning after 70 days of life	0.10		NSTDpoi[2]	-3;3
Number of calves with horn	0.76		NSTDpoi[2]	-3;3

Details - statistics

Variable	Used mean value	Used STD	Calculations	Chosen values[3]
Dead cow indicator				
Dead cows	0,0247		NSTDpoi[2]	-3;3
Cows emergency slaughtered	0.01028		NSTDpoi[2]	-3;3
Cows euthanized	0.00743		NSTDpoi[2]	-3;3
Calves indicator (until 180 days in life)				
Dead calves	0.08		NSTDpoi[2]	-3;3[6]
Treated calves	0.064		NSTDpoi[2]	-3;3[6]
Claw indicator				
Number of claw diagnosis with pain[7]	0.12		NSTDpoi[2]	-3;3
Professionality of claw trimming[8]				-3;3
Number of trimmed cows	0.67		NSTDpoi[2]	-3;3

Statistical principles

- **Making a normalized standard deviation with 2015 country mean as baseline supposing Poisson or normal distribution.**

- **Example Poisson distribution: Mean mastitis incidence in 2015 was 0.20**
  - **A 75 cow herd would expect 75 x 0.20 = 15 cases**
  - **STD of 15 is the square root = 3.87**
  - **Observed cases are 28**
  - **The difference expected minus observed is 15 – 28 = - 13**
  - **The normalized STD is then – 13 / 3.87 = - 3.36**
  - **As this is an extreme value it is truncated to -3**

- **Example Normal distribution:**
  - **Expected growth rate of young bull in 2015 is 525 g per day**
  - **STD is 81 g**
  - **Observed growth rate is 600 g per day.**
  - **Difference expected minus observed is 600 - 525 = 75 g per day**
  - **Normalized STD is then 75 g /81 g = 0.93**

Adding different results into a part indicator

Example for milk production:

Yield: 1st parity: 6,081 (2nd minus 1st => -1.5)

2nd parity: 8,573 (>2nd minus 2nd => -0.8)

>2nd parity: 9,931 (>2nd minus 1st => -2.2)

sum -4.4 (+2.0 adjusting so that 2015 baseline mean is zero gives **milk production indicator of =>-2.4**)

Example udder health:

Infection level based on CMSCC 23.4 % (gives NSTD -1.35)

Mastitis incidence is 0.019 per cow-year (1 mastitis) (NSTD +3 turned to -3)

Culling due to mastitis 3 cows (NSTD 1.15)

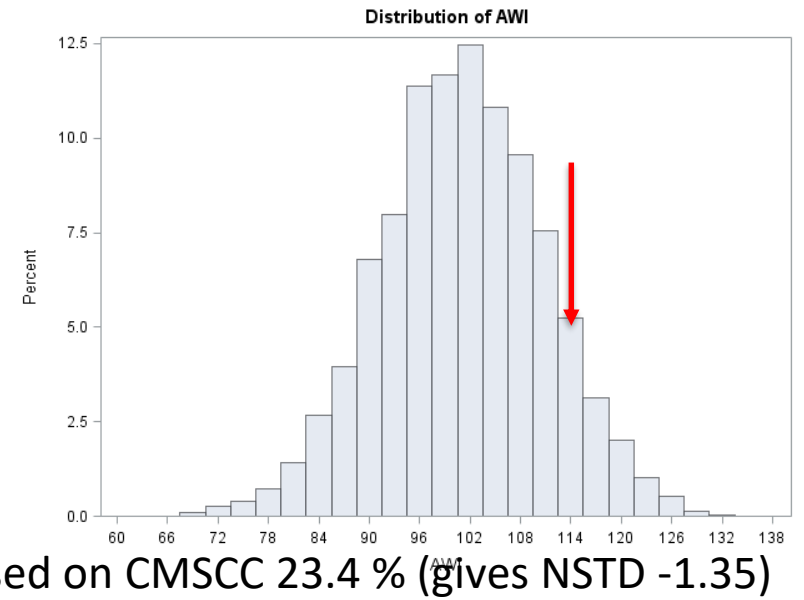
Sum = -3.2 (+0.3 – adjusting so that 2015 baseline mean is zero gives and **udder health indicator of – 2.9**

Example of herd indicator with part indicators

Herd:
50 cows with AMS
Total indicator: 114 (10 % best)

Part indicators:
Milk: -2,4 (10 % worst)
Longevity: -0,8
Methabolism:1,2
Udder health:-2,9 (25 % worst)
Fertility: 1,8
Young stock: 5,5 (5 % best)
Disbudding: 0,7
Dead cows: 2,6 (5 % best)
Cales: 2,2 (25 % best)
Claw: 6,2 (10 % best)

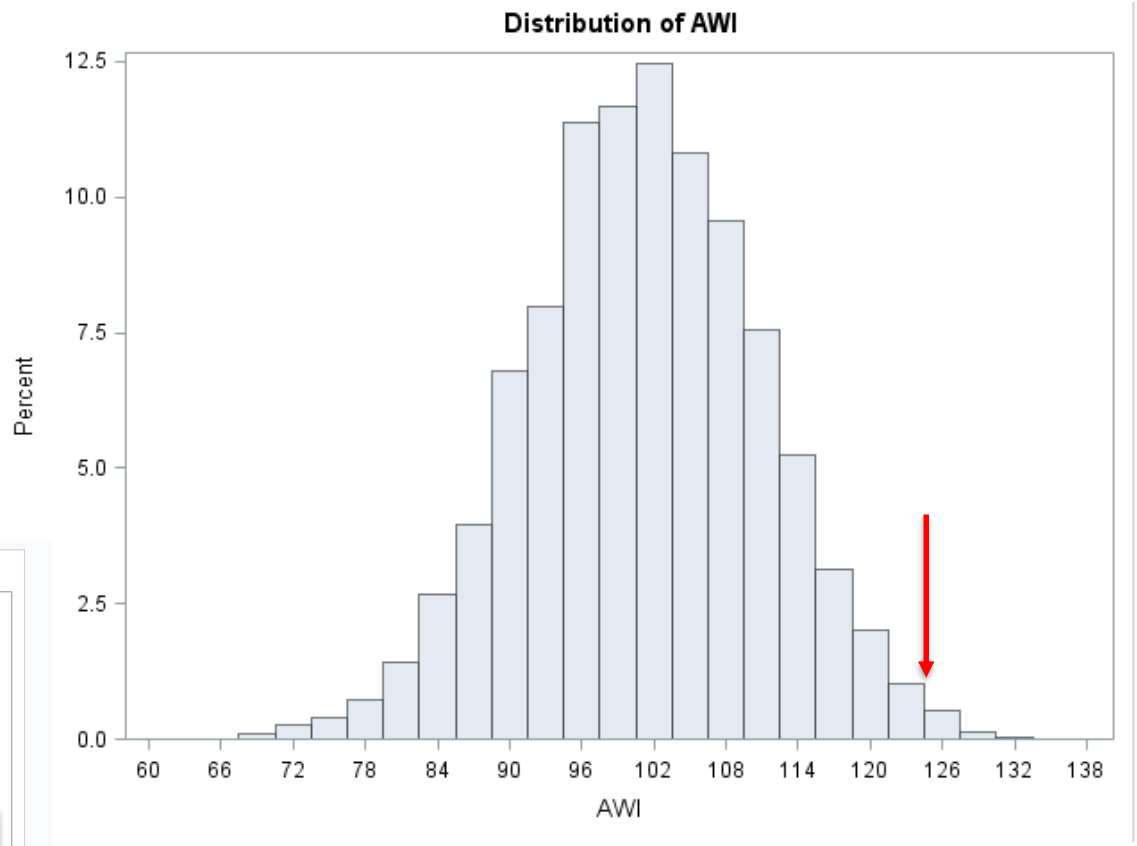
Yield: 1st parity: 6,081 (2nd minus 1st => -1.5)
2nd parity: 8,573 (>2nd minus 2nd => -0.8)
>2nd parity: 9,931 (>2nd minus 1st => -2.2)
sum -4.4 (+2.0 adjusting so that 2015 baseline mean is zero gives **milk production indicator of =>-2.4**)

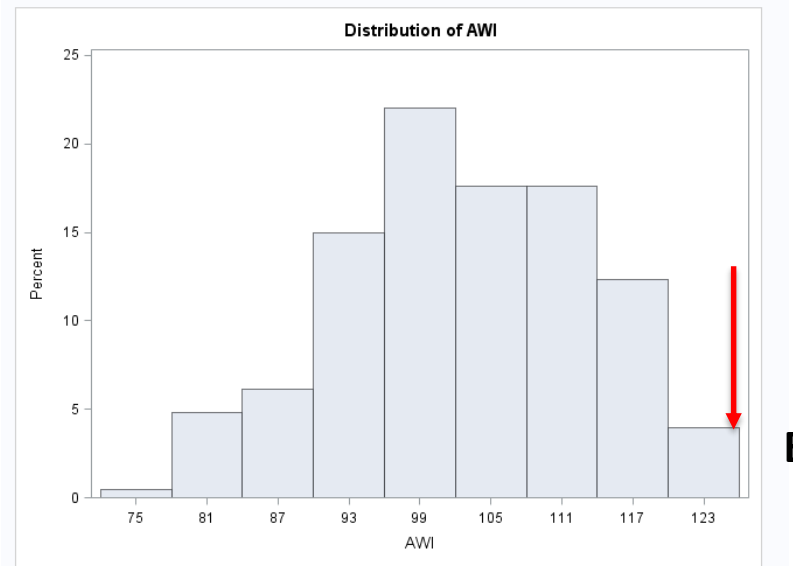


Infection level based on CMSCC 23.4 % (gives NSTD -1.35)
Mastitis incidence is 0.019 per cow-year (1 mastitis) (NSTD +3 turned to -3)
Culling due to mastitis 3 cows (NSTD 1.15)
Sum = -3.2 (+0.3 – adjusting so that 2015 baseline mean is zero gives and **udder health indicator of – 2.9**

Welfare indicator (example)

Herd:
54 cows with AMS
Total indicator: 124 (1 % best)



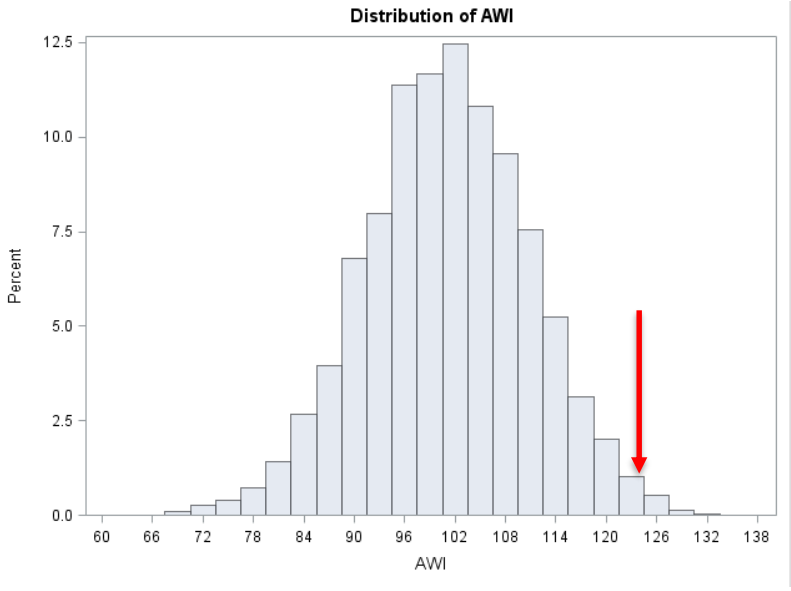


Best in district

Dyrevelferdsindikator med delindikatorer (Mære)

Herd:
54 cows with AMS
Total indicator: 124 (1 % best)

Part indicators:
Milk: -0.4 (among 30 % worst)
Longevity: -0.7 (just under mean)
Metabolism: 2.9 (app. 80 % best)
Udder health: 5.7 (among 5 % best)
Fertility: -0.3 (just under mean)
Young stock: 6.7 (blant de 5 % best)
Disbudding: 0.1 (mean)
Dead cows: 2.6 (among 5 % best)
Calves: -0.6 (just under mean)
Claw: 8.5 (Among the best)



Distribution of some part indicators

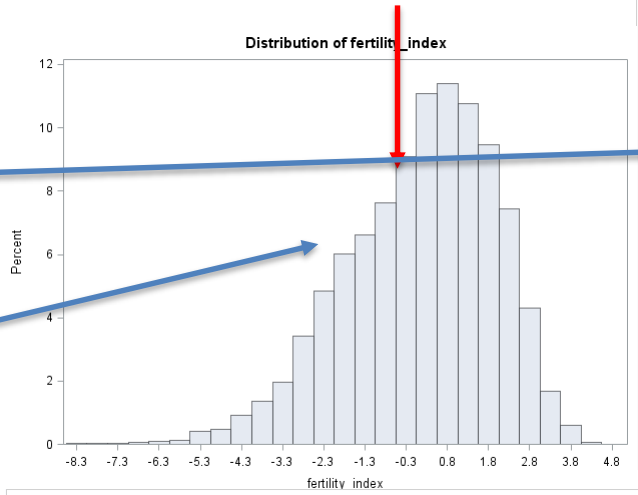
Metabolism (2.9)

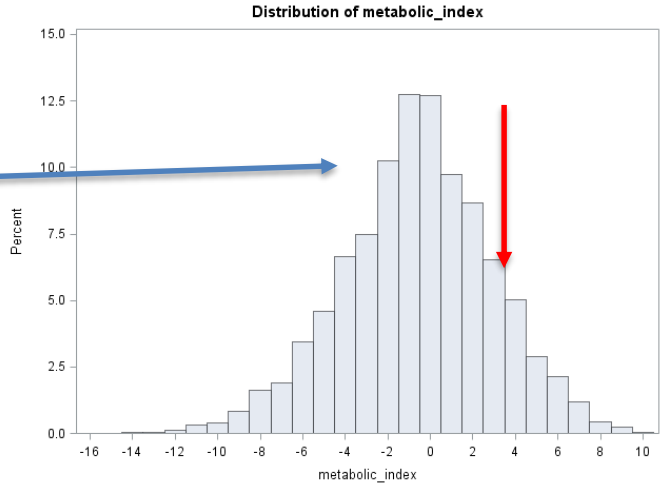
Fertility (-0.3)

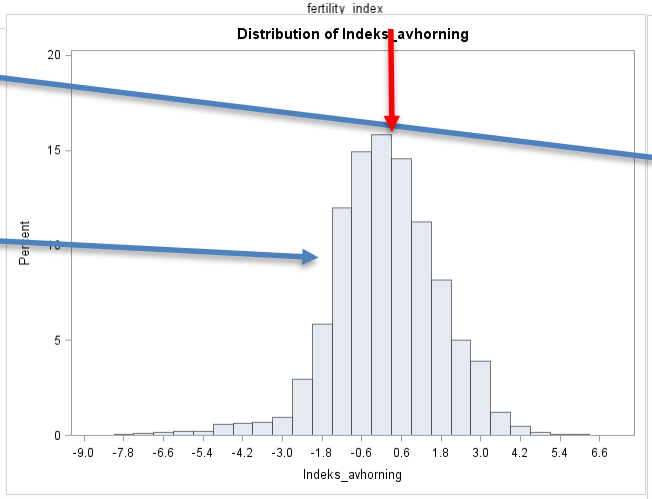
Young stock (6.7)

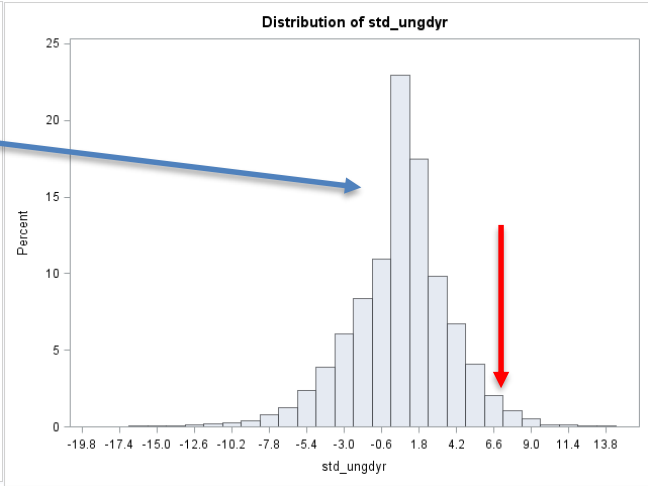
Disbudding (0.1)

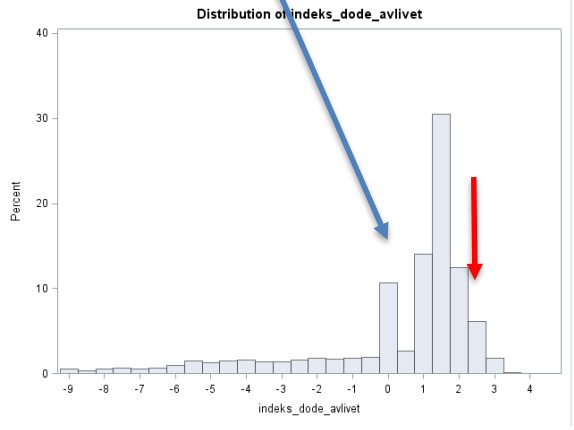
Dead cows (2.6)









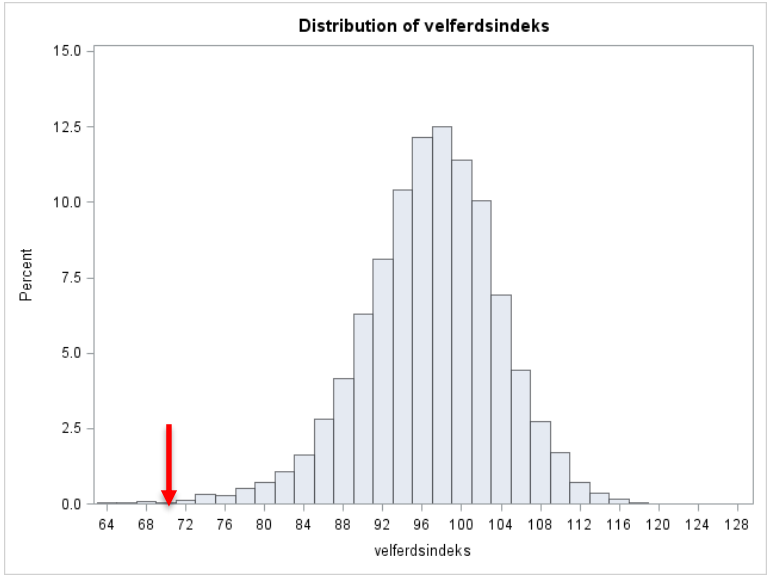


A not so good case

- Appr. 30 cow-years (NRF)
- No vet treatments last year !
- 3 milk fevers and one severe clinical mastitis the last 3 years
- No teat samples
- No calf treatments by vet. !
- No claw trimming
- Infection level SCC 0.30 !
- New infections rate 0.57
- Duration 6.3 months
- BMSCC 179,000 per ml
- 1 stillborn calf !
- 2 dead calves !
- 2 dead cows !
- Production appr. 5000 kg milk
- Fat percentage 3.97
- Protein percentage 3.45
- Kg concentrate /100 ECM 30 (30)
- 1st parity 305 DIM 4,500 kg!
- 2nd parity 305 DIM 4,800 kg!
- >2nd parity 305 DIM 6,500 kg

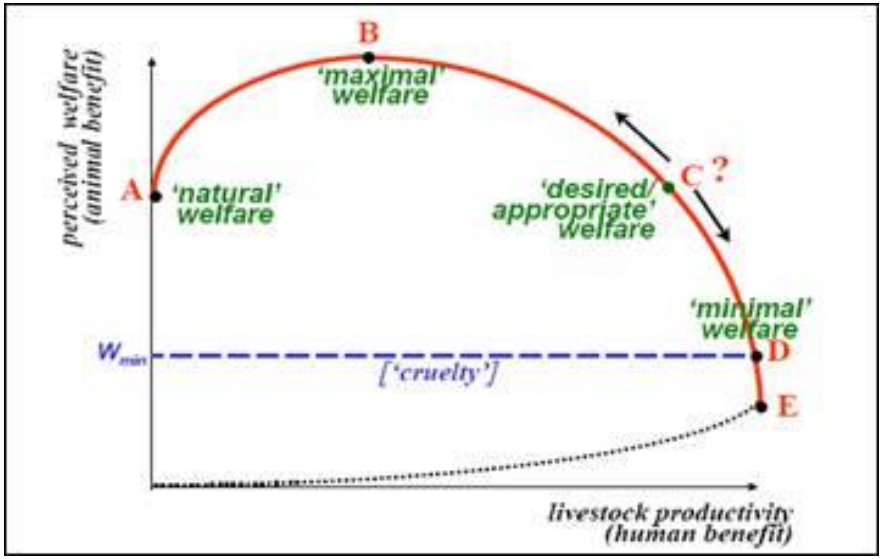
! The most serious difference from mean

- Removal rate 40 %
- Slaughter weight cows 244 kg (265) !
- Bull for mating (no fertility figure)
- Young bull slaughter weight 275 kg (314) !
- Age at slaughter 21.6 months (17.6)
- Growth rate 384 g per day (548) !
- Fat group 2 (thin fat layer) !
- Lost premium quality milk 1 month since 1st January 2015 (cell count)
- Quota fill goes down from 90 to 75 %
- **Animal welfare indicator of 69.**

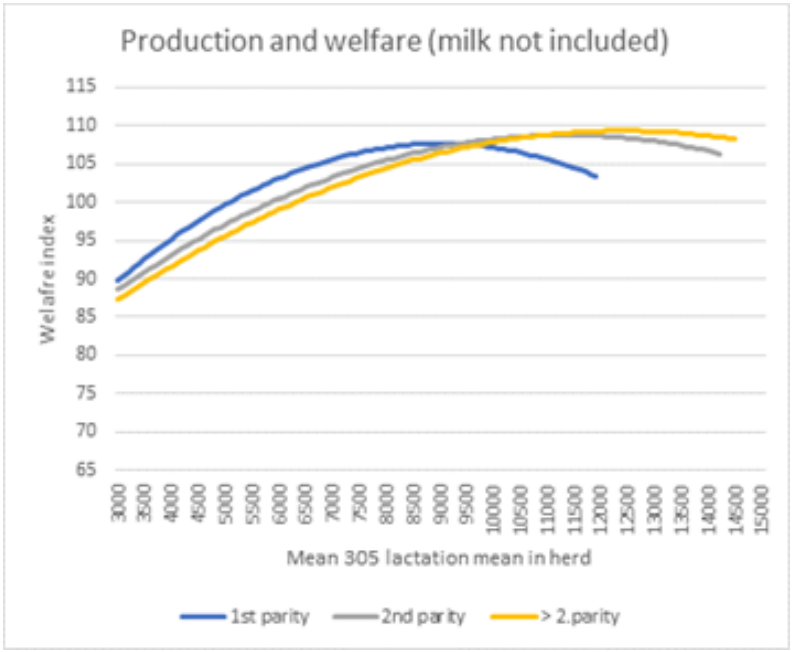


Association between milk production and animal welfare

From textbook on economics



Association from the prototype where the milk indicator is removed



Cow shed visit and audit

Chapter I. Emotional elements (ranking)

These factors would be ranked to cover emotional elements in observational audit in cow sheds

Rank number	Factor	Variable	Measure	Source	Ranking
1	Freight or contact seeking animals	Flight observation	Distance when animals escape from humans	Observation	xxxxxxx
2 (cubicle)	Laying index (proportion laying of those not eating or drinking)	Stall use index	Proportion of animals laying of those not eating or drinking	Observation	xxxxxx
2 (Tie-stall)	Laying and raising movements in tie-stalls	Observation	See and judge normal raising and laying behaviour	Observation	xxxxxx
3 (Cows)	Cleanliness	Observation	See separate scale		xxx
3 (Calf)	**Playing behaviour**	Observation			xx

Cow shed visit and audit

Chapter II. Natural life. Variables recorded in Animal recording and could be secured by farm audit

Factor	Variable	Measure	Source	Ranking
Freedom to move	Cubicles/Tie-stalls	Animal Recording		
Pasture (number of weeks)	Number of weeks	Free		
Proportion of roughage	Percentage concentrate	Animal recording		
Access and use of calving pens	Number per cows	Observation		

Chapter II A (Cows). Natural life. Variables needed to be observed by audit

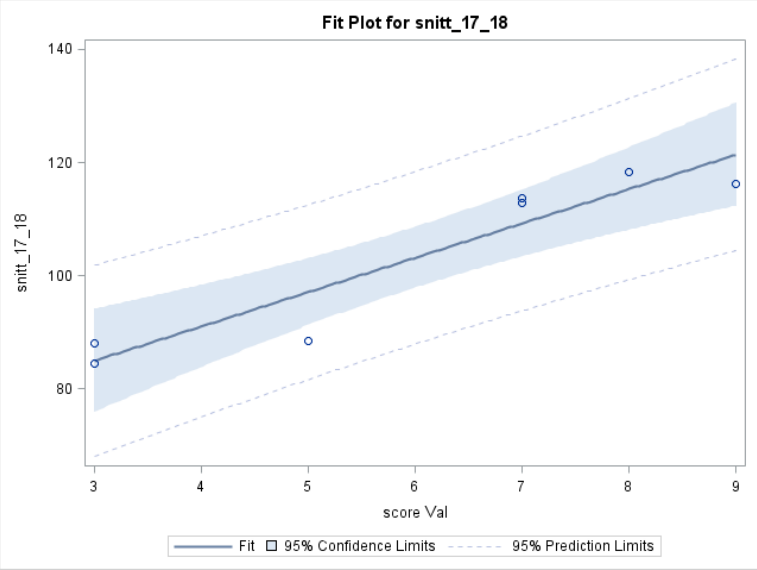
Factor	Variable	Measure	Source	Ranking
Good access to drinking water	Number of drinking points or cm accessible	Observation		xxxxx
Good access to feed	Always feed access	Observation		xxxx
Soft laying area	Type of matrasses	Observation		xxxx

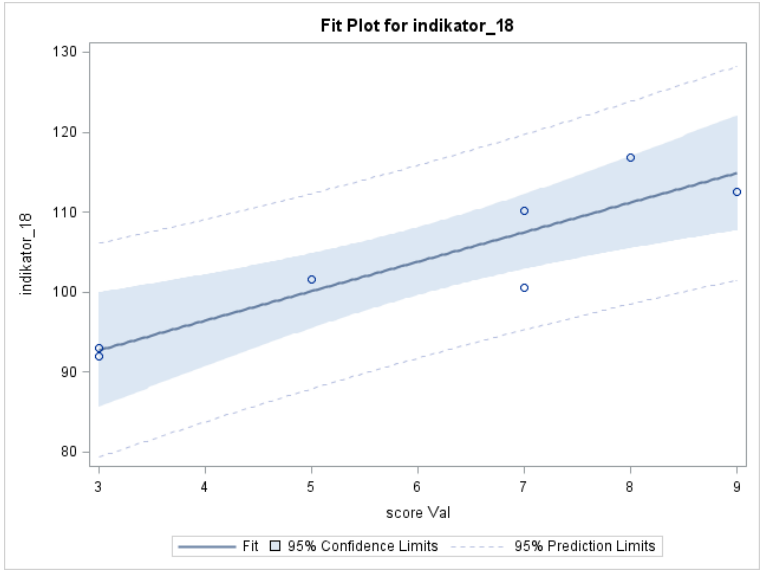
Chapter II B (Calves). Natural life. Variables to be observed in audit

Factor	Variable	Measure	Source	Ranking
Milk feeding, whereby colostrum	Amount, frequency and early colostrum	Interview and observation		xxxxxx
Social interaction	Contact between animals	Observation		xxxx
Weeks in single boxes	Can calves be together	Observation		Xxx

Prototype of indicator – now validation

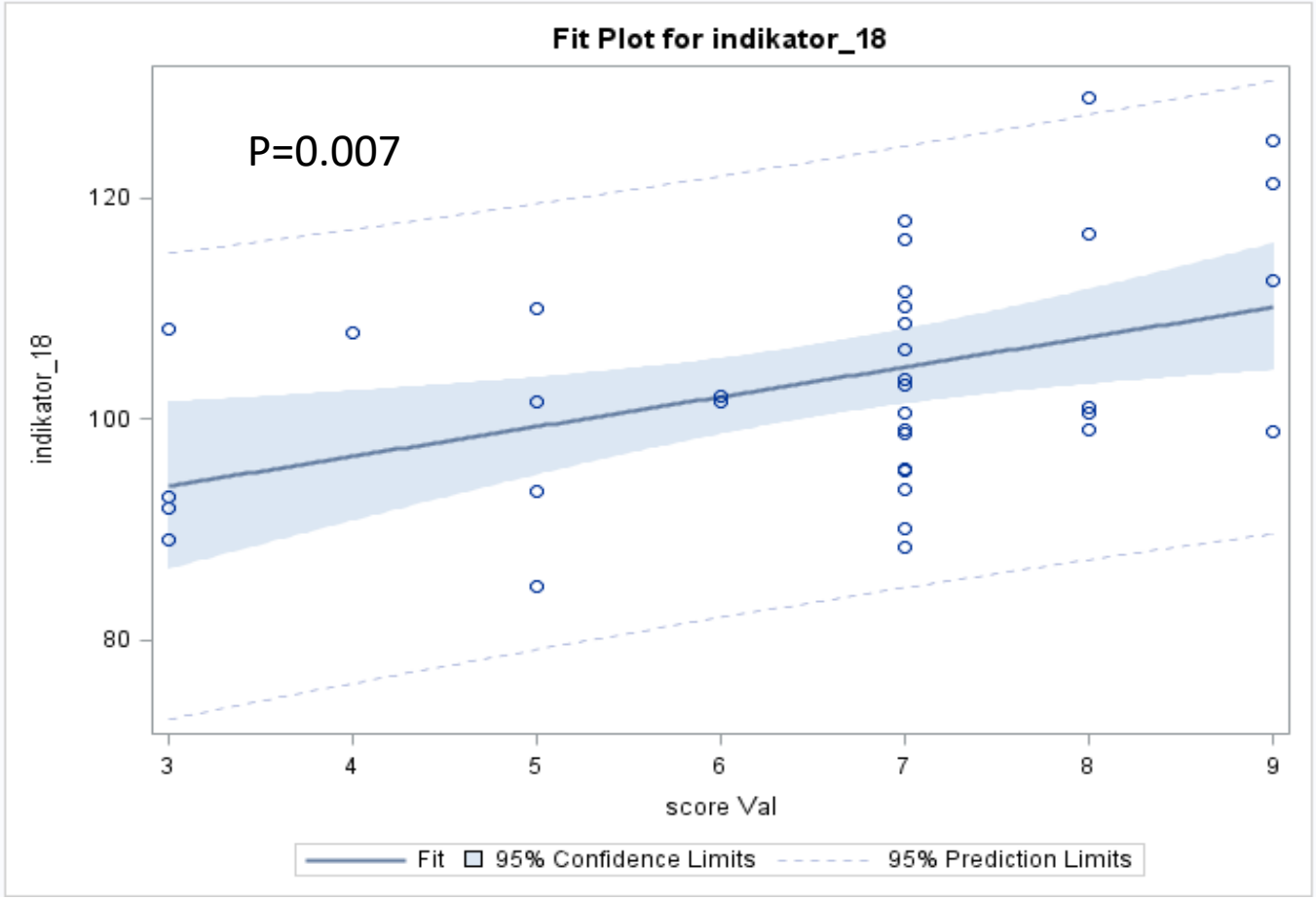
- 5 veterinarians employed by TINE audited 39 herds without knowing the indicator value.
- They recorded several factors which was not included in the indicator such as cleanliness of animals, lame animals, laying comfort, milk feeding and social interaction between calves, flight reaction, wounds, pasture, calving in freestalls (outside pens), etc.
- They thereafter gave a total score from 0 to 10 on a scale.



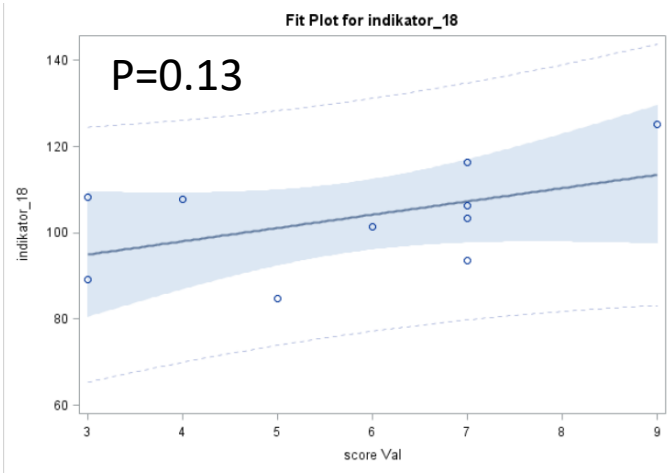


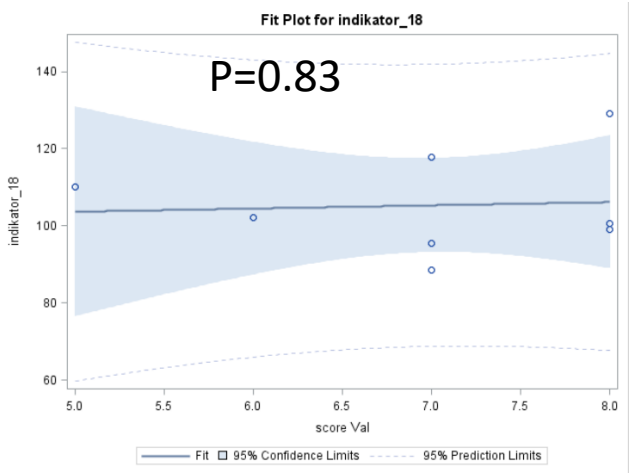
Validation of the indicator against the score at barn audit

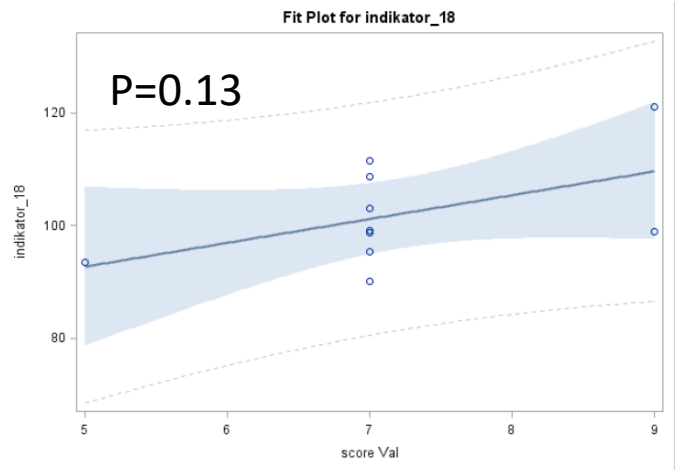
Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	85.86325000	6.39435103	13.43	<.0001
score_Val	2.69203814	0.94393633	2.85	0.0073

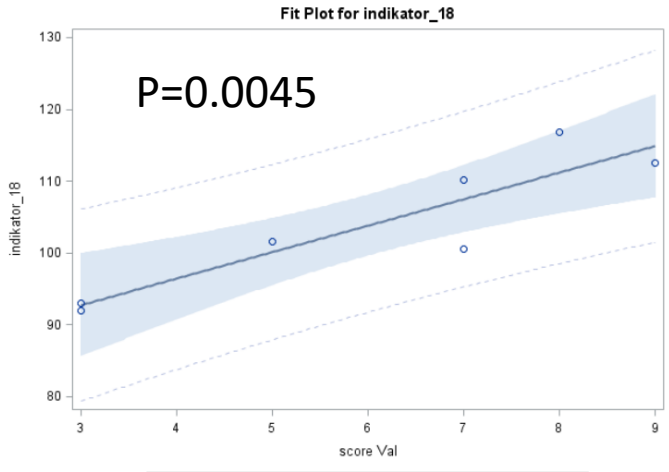


Difference between the raters

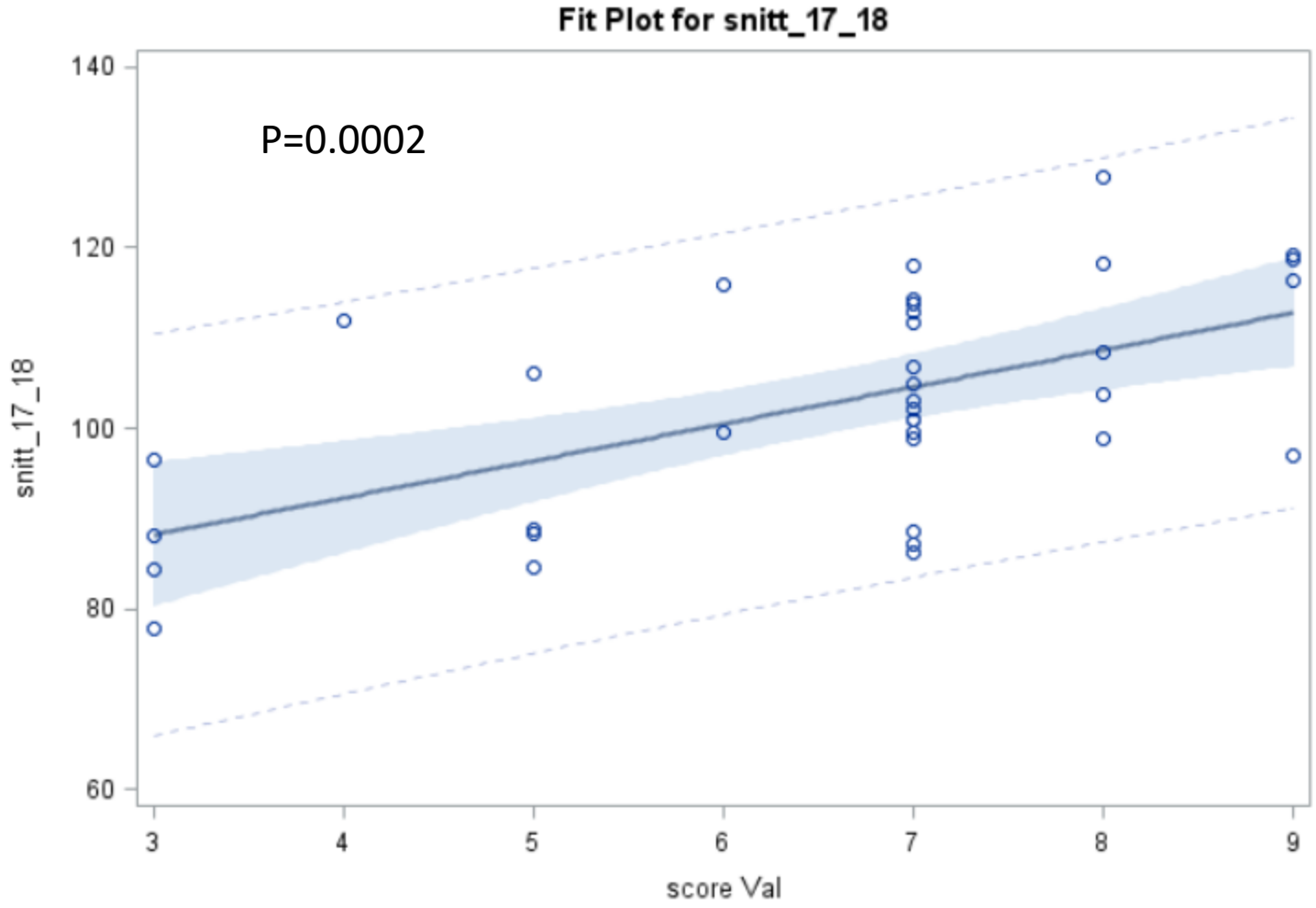




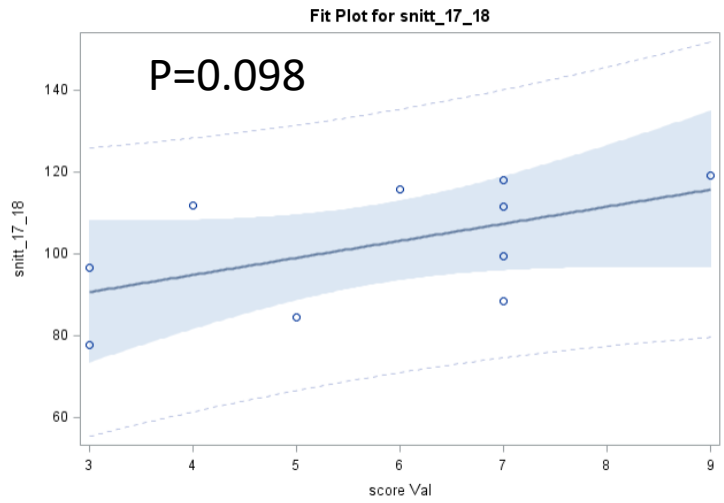


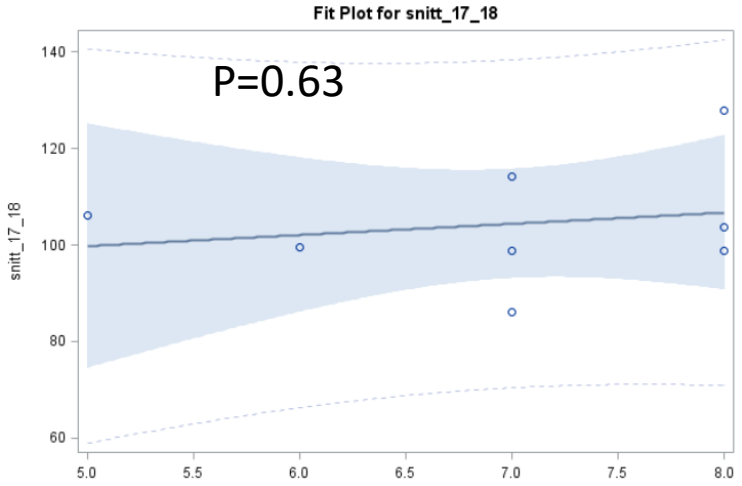


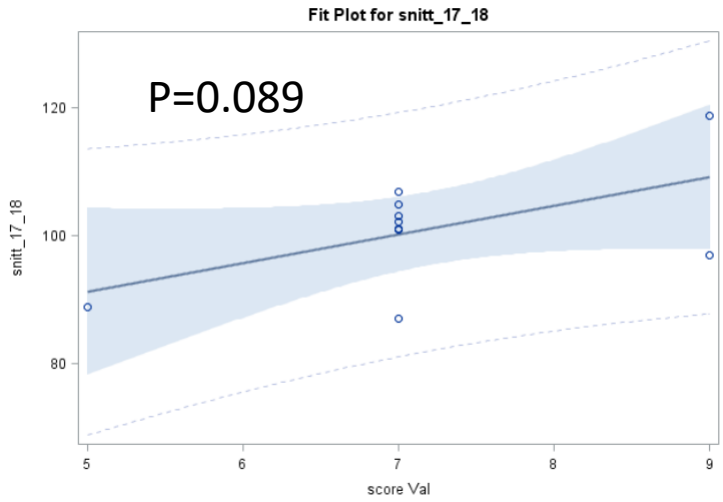
Mean indicator 2017 and 2018

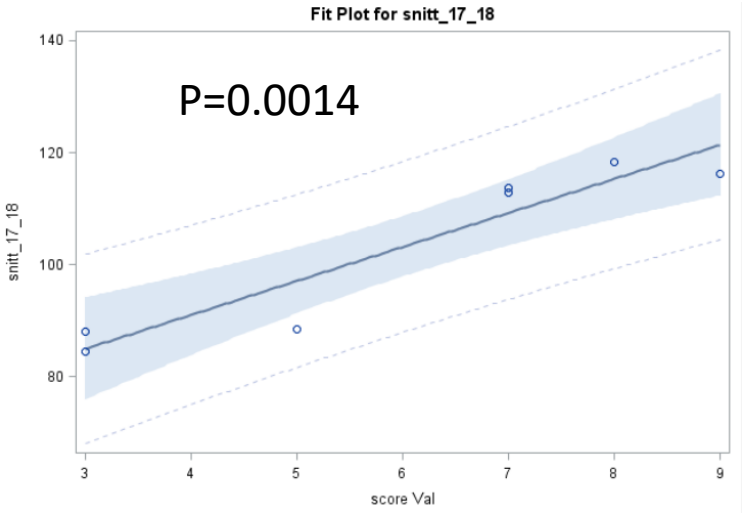


Mean indicator 2017 and 2018









Questions

- What is a objectiveness of a person doing audit ?
- Some herds are outliers !
  - Breed differences
  - Certain management systems (organic etc.)
  - Could indicator be manipulated by farmers?
  - Some could have really good production results, but still cows are dirty!

- **There is a need for a audit**

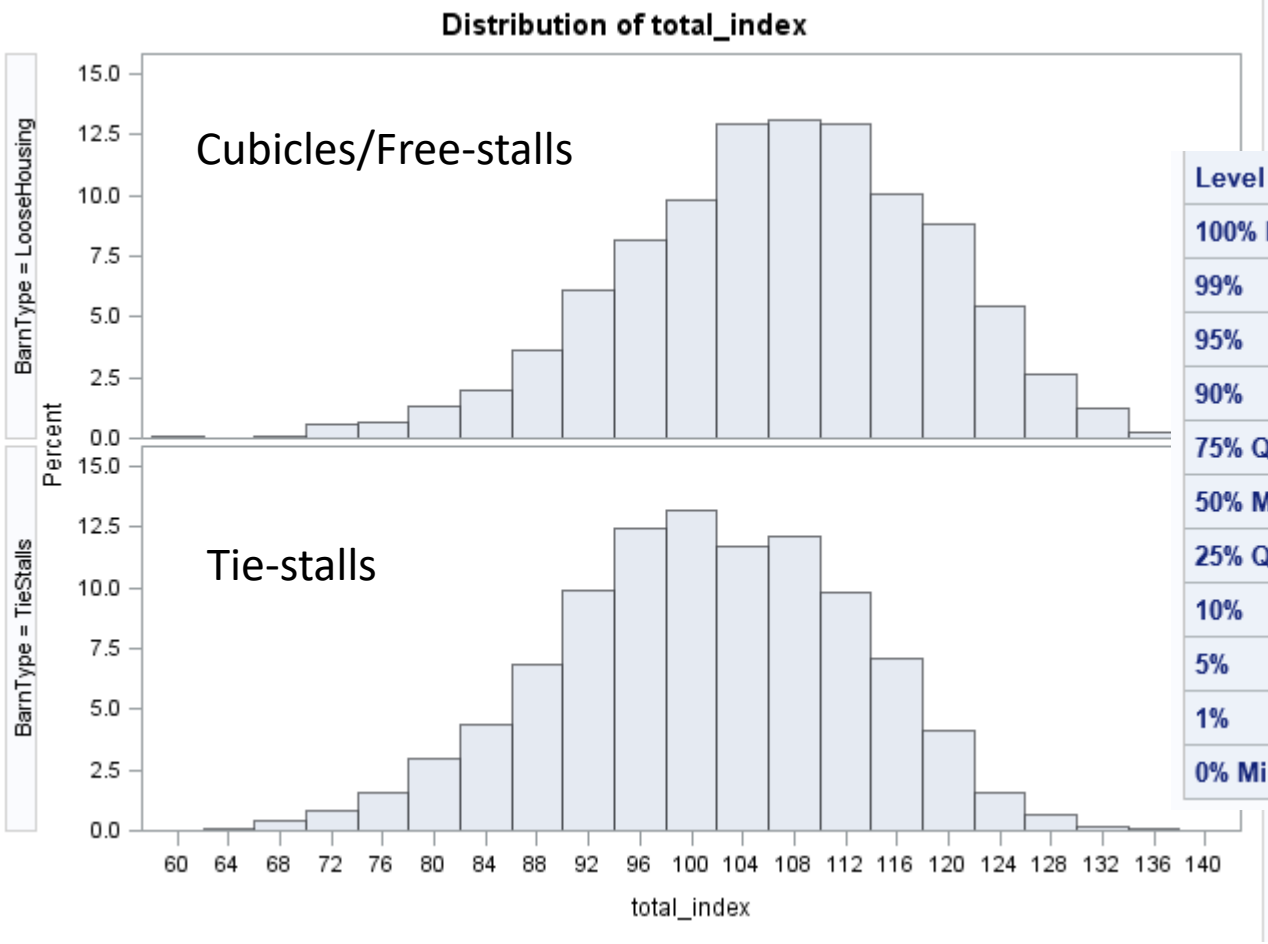
- How do we secure objectivity of the person doing audit

- Different people tend to put more weight of separate factor (like free movement, pasture, calf and mother together etc. some factor are good and some bad in the same farm – weight are based on experiences and culture)

- There is a need for **scientific and holistic view** on animal welfare, how could this be secured?

- What about a third part audit – and the objectivity of that part?

Is there an objective difference between cucicles/free-stalls and tie-stalls ?



Level	Tie-stall Quantile	Free-stalls without AMS Quantile	Free-stalls with AMS Quantile
100% Max	134.2426	134.6948	141.1118
99%	125.4417	129.1589	132.4884
95%	119.0182	123.3330	126.0176
90%	115.6477	119.5230	122.5891
75% Q3	109.5686	113.0282	116.5252
50% Median	101.2822	105.2189	108.4008
25% Q1	93.1320	97.1857	99.8239
10%	85.8469	89.3788	91.9784
5%	80.7768	84.0633	86.9567
1%	72.3180	73.9800	77.7071
0% Min	64.1377	58.8683	71.8440

There is large variation within all groups – Free-stalls have 4 points extra – should they have more points due to freedom to move???

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Possibility to develop a animal welfare program in TINE with ISO TS 34 700 certification?

The OIE and ISO standard gives a possibility to have an ISO certification according to **ISO TS 34 700**.

Such system could include:

1. **The animal welfare indicator** (presented for all herds in the Animal recording)
    1. We are working on that, prototype ready, partly validated and under final production

2. **Annual audit by advisor** (all producers – could be weighted according to results from the indicator)

3. **A third part audit** through the **quality assurance system (KSL)** (could be simplified and standardized better)

Certification process

We are now searching for a company who could take on the certification process

It would be a benefit to have the same company as are certifying the ISO 90001

So fare no company is ready – they also have to be certified.

So, this would take some time – meanwhile farmers are prepared by meetings and group work processes to understand and secure their will to go into this kind of process on animal welfare.

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Dyrevelferd

Dyras ve og vel – dine valg gjør en forskjell!

TINE RÅDGIVING

HEALTHY ANIMALS GIVES HEALTHY PRODUCT

TINE RÅDGIVING

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Thank you!
Questions?