Benefits of recording of diagnostic data veterinarian perspective

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ICAR Technical Workshop 2013

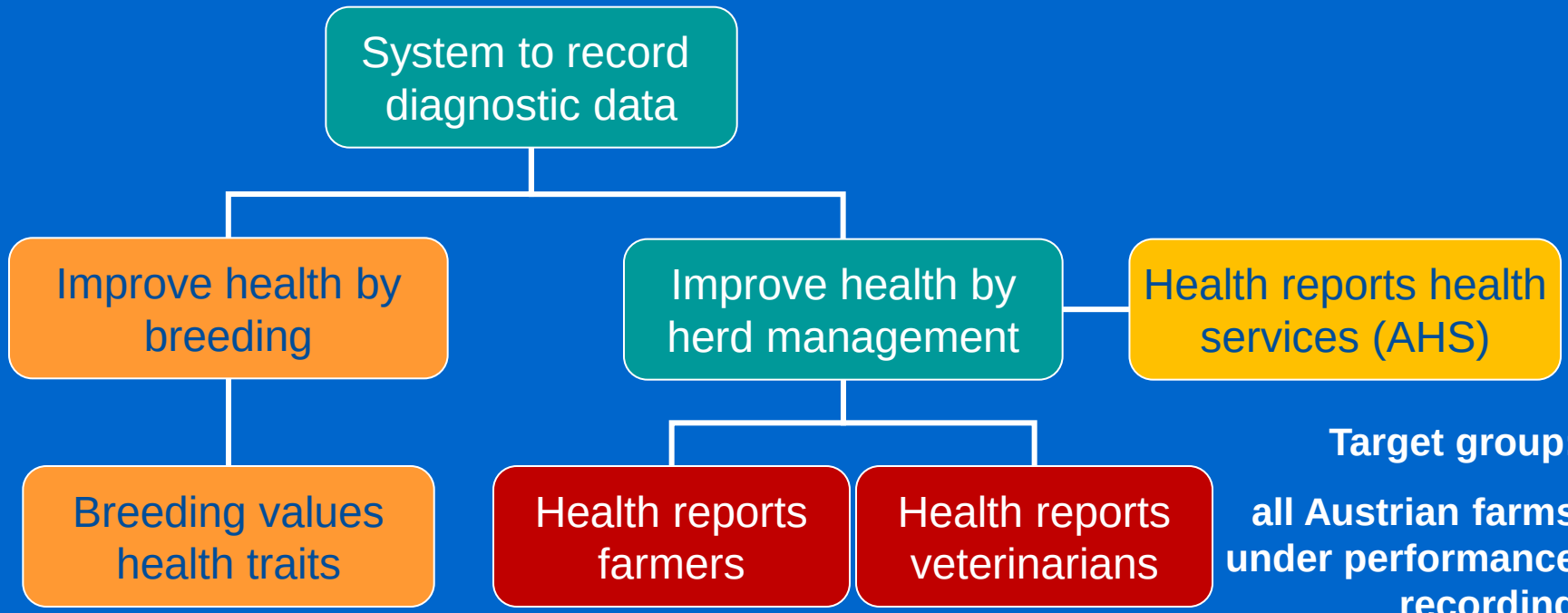
30 – 31 May 2013

Aarhus, Denmark

Benefits of recording of diagnostic data veterinarian perspective

- Recording of diagnostic data – health monitoring
- Status of recording of diagnostic data in Austria
- Management decisions to improve health status
- Auditing member farms of the Austrian AHS
- Information about health status of the population
- Use of antibiotics in dairy cattle - preliminary results

Benefits of recording of diagnostic data veterinarian perspective



Target group:

all Austrian farms under performance recording

Arzneimittelabgabe- Arzneimittelrückgabe- und Anwendungsbeleg

Lfd.Nr:: **1184** Datum: 27.01.2008

Betrieb: WEIDNER FRANZ
PICHELDORF 10
8600 BRUCK AN DER MUR

☑ TGD

Tierarzt: Obritzhauser Dr. Walter
Randweg 2
8605 Parschlug

LFBISNr.: **3532593**

		Bezeichnung des Arzneimittels	Menge EH	Charge	Wartezeiten Dosis	Intervall	Anwendungsdauer
10:24 Rind	AT000328076361	Mastitis parenchymatosa acuta **51**	Ab				WZ Fleisch iv 0 0
			Ab				WZ Fleisch iv NA 3
			An				WZ Fleisch iv 4 0
			An				WZ Fleisch iv NA 0

☑ NB ohne Angabe

LFBISNr.: 3532593

10:24 AT000328076361 A
Rind Mastitis parenchymatosa acuta A
51
A

Behandlungen durch den Tierhalter

Datum	Kennzeichen	Bezeichnung des Arzneimittels	Menge / Dosierung pro Tier und Tag	Unterschrift

Ich bestätige mit meiner Unterschrift, dass ich vom Tierarzt über die Vorschriften des § 15 Abs.5 lit.a und b Lebensmittelgesetz (LMG) informiert wurde.

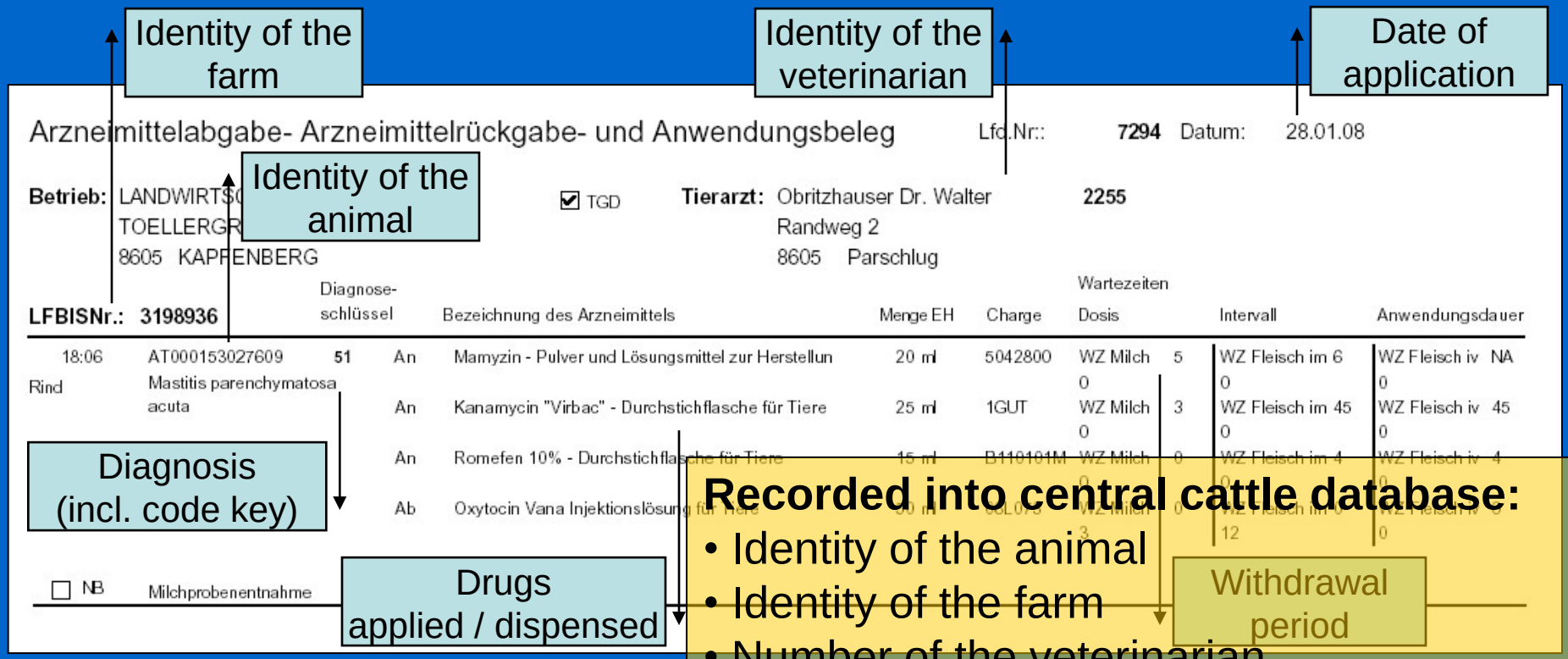
Dr. Obritzhauser

<AN>- Anwendung
<AB> Abgabe

Leergebinde Rücknahme am: _____ Unterschrift: _____

Benefits of recording of diagnostic data veterinarian perspective

Receipt for the application of drugs



Recorded into central cattle database:

- Identity of the animal
- Identity of the farm
- Number of the veterinarian
- Diagnosis (code keys)
- Date of diagnosis (first treatment only)

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Recorded diagnoses
May 2013

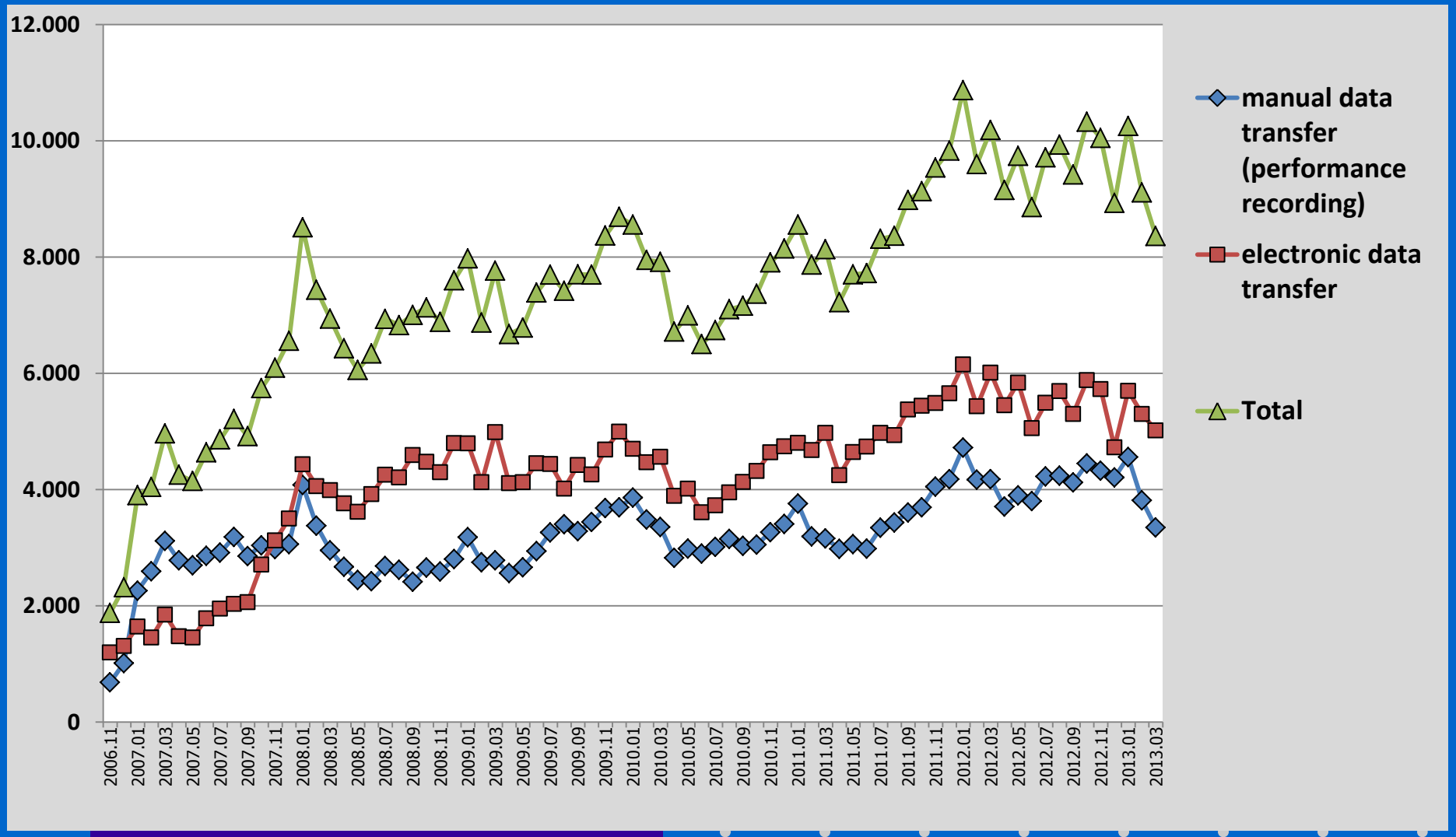
∑ diseases and disorders concerning fertility = 30 %

∑ udder diseases = 24 %

∑ metabolic diseases = 5 %

CODE	diagnosis	number	%
51	acute mastitis	90.328	15,29
56	drying off using antimicrobials	66.473	11,25
43	ovarian cysts	57.124	9,67
42	silent heat, anestrus	54.499	9,22
52	chronic mastitis	44.156	7,47
00	no diagnosis	35.755	6,05
48	retained fetal membranes	26.660	4,51
41	endometritis	24.918	4,22
72	pneumonia	23.539	3,98
31	milk fever (hypocalcemia)	22.300	3,77
61	interdigital dermatitis	14.323	2,42
49	diseases of the post-parturient period	12.813	2,17
21	diarrhoea	9.790	1,66
71	other diseases of the respiratory tract	9.544	1,62
16	diarrhoea in newborn calves	9.166	1,55
55	other udder diseases	8.149	1,38
62	sole ulcer	7.254	1,23
33	clinical ketosis	6.774	1,15
94	diseases of the horns	6.133	1,04
96	systemic diseases	5.822	0,99
03	fever, feverish systemic diseases	4.601	0,78
24	hardware disease	4.338	0,73
93	scabies and other infectious skin diseases	3.736	0,63
46	dystocia	3.596	0,61
11	umbilical inflammation	3.476	0,59
	total	**590.815**	

Benefits of recording of diagnostic data veterinarian perspective



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Reasons for reduced fertility in high yielding dairy cows

	lengthening of calving to conception period
• Hypocalcemia (milk fever)	13 days
• Retained fetal membranes (RFM)	25 days
• clinical mastitis	14 days
• Endometritis	31 days
• Ovarian cysts	64 days
• Lameness	14 days

Borsberry and Dobson (1989)

Collick et al. (1989)

Benefits of recording of diagnostic data veterinarian perspective

Reasons for reduced fertility in high yielding dairy cows

- **Postpartum interval to start of luteal activity**

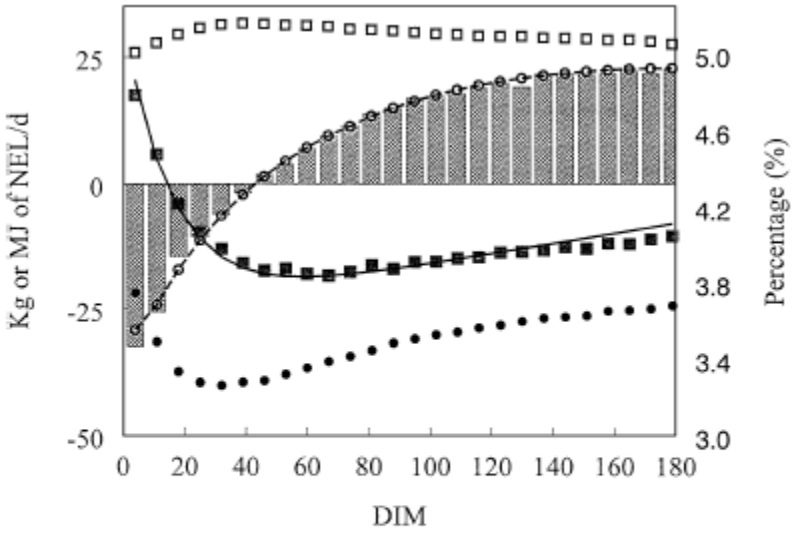


Figure 1. Energy balance, milk yield, and milk composition from calving to 180 DIM. Data represent weekly uncorrected energy balances (bars), energy balances as estimated by Equation [1] (○), mean milk yield (□), mean fat percentage (■), and mean protein percentage (●). The line connecting the solid squares represents fat percentage as estimated by Equation [3].

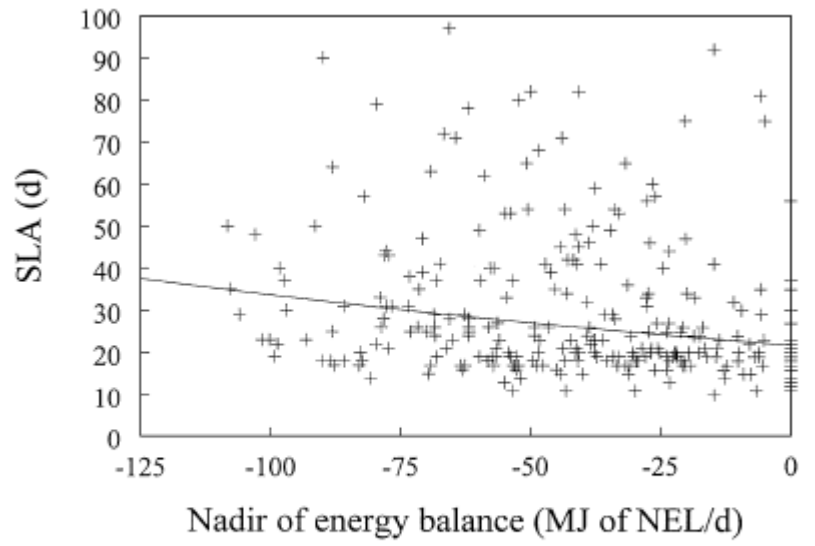


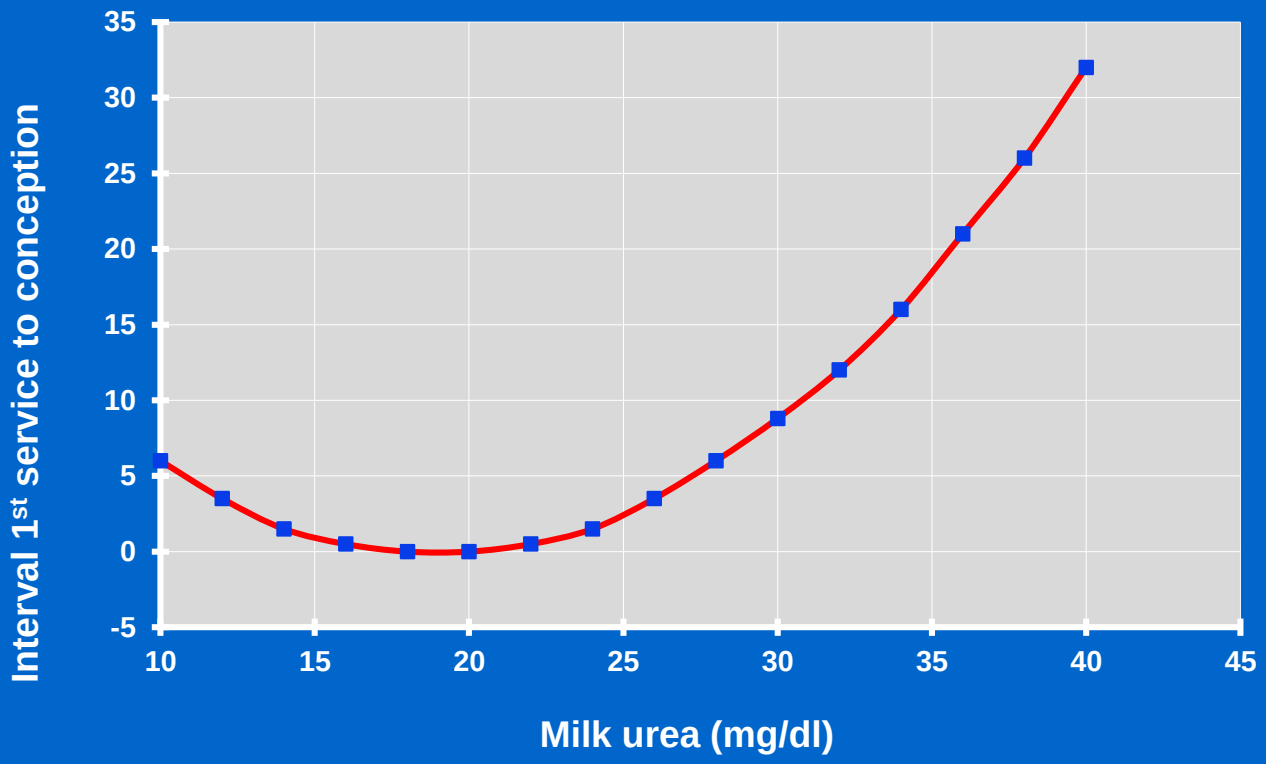
Figure 4. Relationship between postpartum interval to start of luteal activity (SLA) and nadir of energy balance. The fitted line represents a loglinear curve through these points.

deVries u. Veerkamp (2000)

Benefits of recording of diagnostic data veterinarian perspective

Reasons for reduced fertility in high yielding dairy cows

- **Early embryonic death**



Wenninger u. Distl (1994):

Significant correlation between 1st service to conception interval and milk urea (optimal value = 15 – 25 mg/100 ml)

Diagnoseübersicht der letzten 3 Monate

Kühe

Nr.	Name	Lebensnummer	L.	Kalbung	Tg.	Diagnose	
6	KATHI	AT 152.954.616	3	05.12.12	69	12.02.13	Silent heat
17	SILWANA	AT 152.960.416	3	22.11.12	79	09.02.13	Ovarian cysts
27	FRADI	AT 516.220.847	8	22.02.13	13	07.03.13	Sole ulcer
48	FRANZA	AT 688.062.214	4	25.11.12	71	04.02.13	Clinical mastitis
53	ELEA	AT 495.663.418	1	01.11.12	76	16.01.13	Endometritis
60	FREIHEIT	AT 230.732.272	8	03.02.13	30	05.03.13	Clinical ketosis
					0	03.02.13	Hypocalcemia (milk fever)

Frischlaktierende Kühe (bis 100. Melktag) mit Eiweißgehalt <= 3 und/oder FEQ < 1,0 oder > 1,5

Nr.	Name	Lebensnummer	L.	Tg.	13.04.13 Eiw%	FEQ		03.03.13 Eiw%	FEQ	
20	FALKE	AT 563.115.317	2	18	3,40	**1,81**				
27	FRADI	AT 516.220.847	8	50	**2,83**	**1,75**		3,06	**2,13**	
31	FRIESE	AT 688.080.414	3	49	3,09	1,39		3,66	**0,99**	
60	FREIHEIT	AT 230.732.272	8	69	3,29	1,34	(D)	**2,83**	**2,14**	(D)

Kühe mit Zellzahl über 200.000 oder mit Euterdiagnosen (Schalmtest empfohlen)

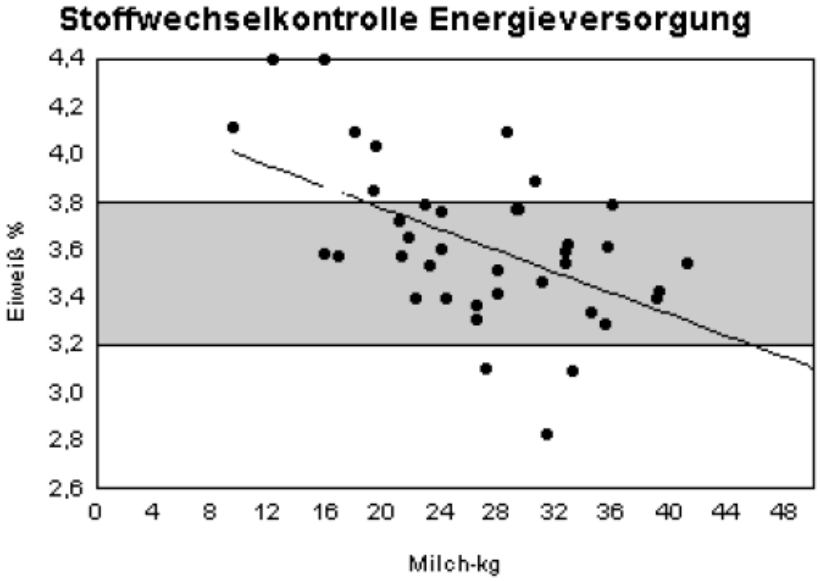
Nr.	Name	Lebensnummer	L.	Tg.	13.04.13 Zellzahl	03.03.13 Zellzahl		24.01.13 Zellzahl
24	FROSCHI	AT 839.126.216	2	222	210	128		127
48	FRANZA	AT 688.062.214	4	139	191	140	(D)	38
	LILO	AT 295.048.914	4	287		232	(D)	324

Benefits of recording of diagnostic data veterinarian perspective

Betriebsdatenübersicht und Fruchtbarkeit

Tier Nr. R	Name Lebensnummer	Abkalbung Lakt. Eka/Zkz	Abk.dat. Rast/SP	Belegung und Belegstier Bel.datum Stiername	Sollkalb. Stiernummer	Gzw	R	Leistungsdaten M-kg Mbk	lfd. Laktation Standardlaktation			
1	FLIPSI	2	13.05.12	22.07.12(1)	**01.05.13**	130	HF	T 314	10.002	3,77	3,43	720
RF	AT 080.879.317	399	70/70	LENNOX DE 16 02607566				305	9.817	3,77	3,42	706
6	KATHI	3	05.12.12	(D) 14.02.13(1)	02.12.13	120	BV	35,6 129	4.893	3,73	3,35	347
BV	AT 152.954.616	378	71/71	PADUA AT 405.590.509								
16	SIRETTA	1	01.08.12	16.09.12(1)	**04.07.13**	130	BV	22,8 255	7.747	4,11	3,75	608
BV	AT 850.393.917	30 Mo.	46/46	GS HIGHWAY AT 479.716.317				3,78 200	6.336	4,08	3,74	495
17	SILWANA	3	22.11.12	02.02.13(2)	(D) 20.11.13	128	BV	36,0 142	5.654	4,26	3,55	442
BV	AT 152.960.416	366	49/72	ALIBABA CH 120033040506								
33	FREUNDIN	3	07.07.12	04.10.12(1)	**14.07.13**	151	HF	28,6 280	9.696	3,98	3,82	757
RF	AT 152.941.116	326	89/89	SNOWMASTER DE 03 54412245								
34	KATJA	4	11.02.12	(D) 16.09.12(6)	**04.07.13**	129	BV	15,8 427	12.326	4,39	3,91	1023
BV	AT 570.029.309	488	64/218	AG VOICE AT 351.924.317				305	10.014	4,18	3,78	797
36	LIMETTE	1	04.11.12	(D) 29.12.12(1)	16.10.13	121	BV	23,2 160	4.485	3,79	3,25	316
BV	AT 495.659.818	27 Mo.	55/55	PAYSSLI DE 08 13034326				2,28 100	3.046	3,66	3,19	209
37	LINO	3	21.08.12	01.11.12(2)	19.08.13	126	BV	19,2 235	6.702	4,26	3,74	536
BV	AT 688.060.914	511	45/72	VIGOR US 195.618								

Benefits of recording of diagnostic data veterinarian perspective



Klasse	Anz	%
Energieübersch.	8	20,0
normal	28	70,0
Energiemangel	4	10,0

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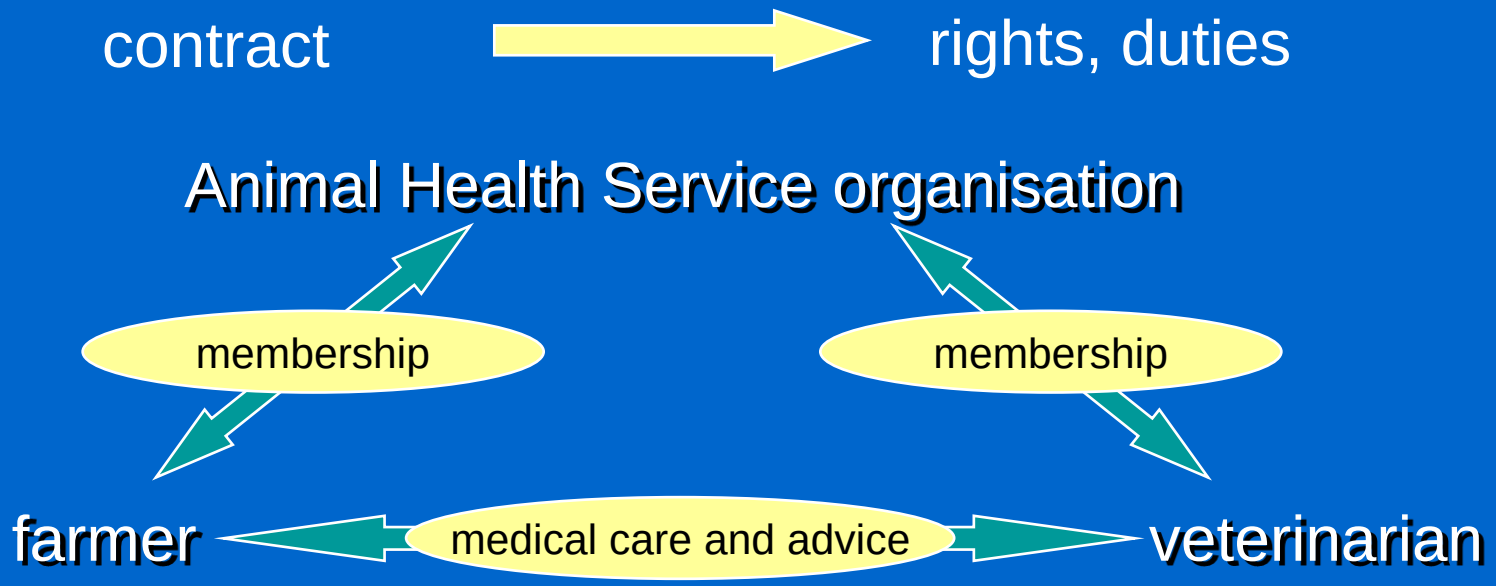
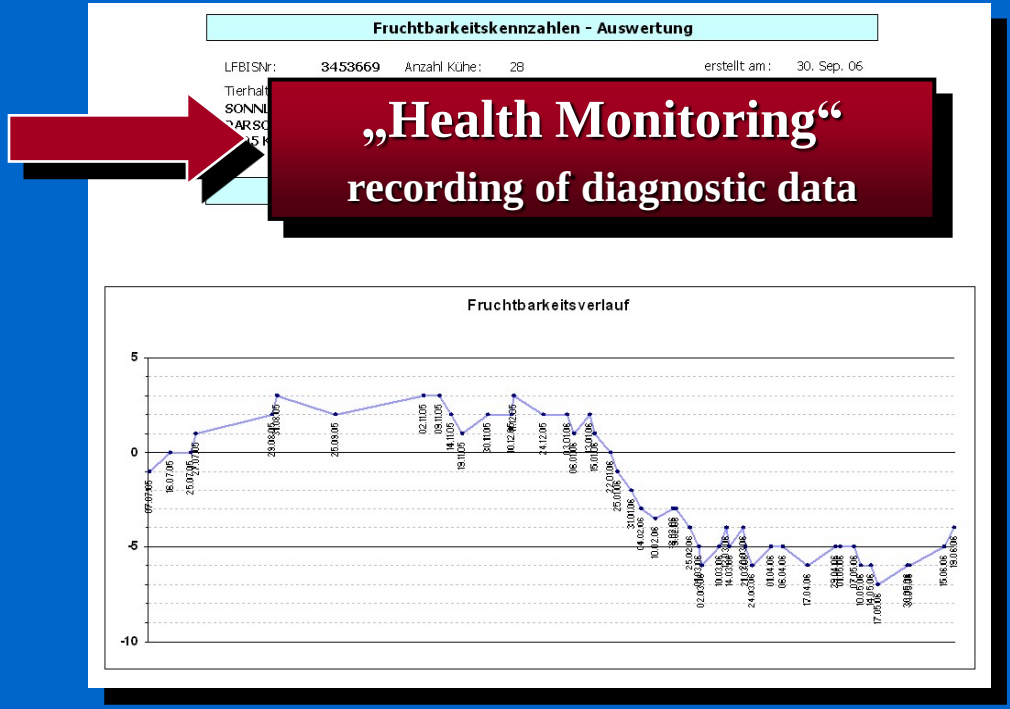
Benefits of recording of diagnostic data
veterinarian perspective

Animal Health Service in Austria
= systematic support and advice



Benefits of recording of diagnostic data veterinarian perspective

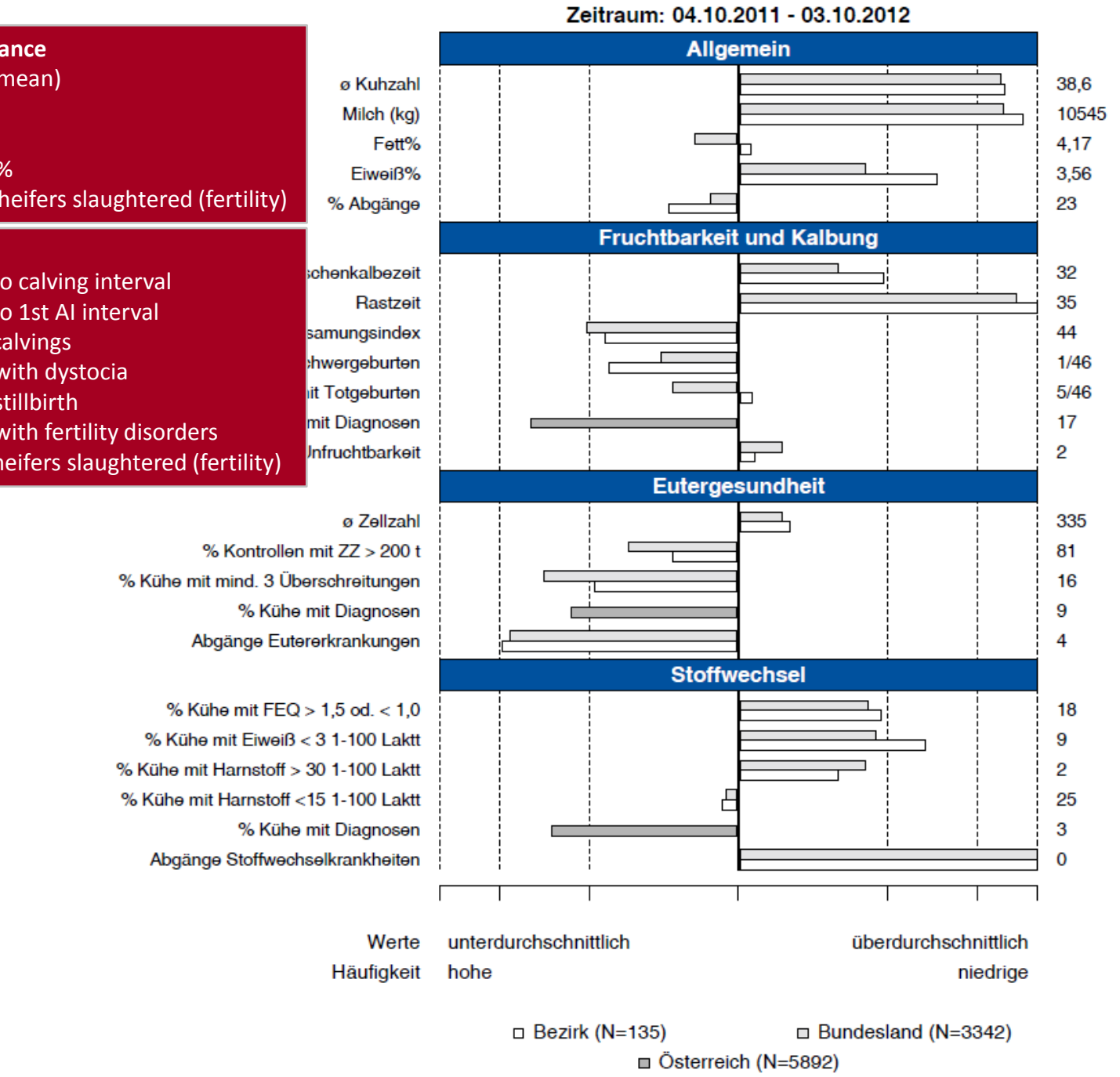
- **evaluating the general health situation**
  - fertility
  - udder health
  - metabolic status
  - diseases of
    - digestive tract
    - respiratory tract
    - feet and claws
    - skin
    - calves



Annual health report – graphical summary of indicators

Performance
cows (mean)
Milk (kg)
Fat-%
Protein-%
% cows/heifers slaughtered (fertility)

Fertility
Calving to calving interval
Calving to 1st AI interval
AI / # calvings
% cows with dystocia
% cows stillbirth
% cows with fertility disorders
# cows/heifers slaughtered (fertility)



Annual health report – summary of indicators - fertility

JAHRESBERICHT Gesundheitsmonitoring

	Einheit	Anzahl	Betrieb aktuell	Betrieb Vorjahr	Bezirk	Land
FRUCHTBARKEIT-KÜHE						
Kalbungen						
Zwischenkalbezeit	Tage	32	381	384	407	396
Anteil Zwischenkalbezeit über 420 Tage	%	6	18,8	19,4	44,6	37,2
Serviceperiode	Tage	31	93	95	118	107
Besamungsindex	Bes/Tr.	44	1,8	1,8	1,7	1,6
Besamungen (04.06.2011-03.06.2012)						
Anzahl Besamungen	Anzahl		76	75	22	25
Anzahl Erstbesamungen	Anzahl		35	36	12	14
Erstbesamungsindex	Anzahl	35	2,2	2,1	1,8	1,8
Anteil Nachbesamungen	%	41	54,0	52,0	45,3	44,1
Non-Return-Rate 90 Tage	%	18	51,4	41,7	60,6	59,6
Rastzeit	Tage	35	51	57	84	76
Anteil Rastzeit über 100 Tage	%	1	2,9	2,8	24,0	17,1
Erwartete Zwischenkalbezeit	Tage	31	380		419	408
Anteil Kühe mit Diagnose Fruchtbarkeit	%	17	44,0	50,8		
gnosen Fruchtbarkeit	Anzahl		22	31		
Gebärmutterentzündung	Anzahl		4	4		
Stillbrunst, Azyklie	Anzahl		2	5		
Eierstockzysten	Anzahl		8	13		
Verwerfen und andere Fruchtbarkeit	Anzahl		1	1		
Schwergeburt	Anzahl		1	1		
Nachgeburtsverhaltung	Anzahl		6	6		

 # Fertility disorders
endometritis
silent heat
ovarian cysts
abortion
dystocia
retained fetal membranes

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Annual health report – health status of the population

Diagnoseauswertungen

Merkmale	Code	# diagnoses / 100 cows 2012	2011	2010	Ant. Tiere mit Diag.in % 2012	2011	2010
Tiere in der Auswertung		36.756	31.907	30.610	36.756	31.907	30.610
Spezifische Kälberkrankheiten	**11-17**	**2,32**	**1,97**	**1,76**	**2,24**	**1,90**	**1,72**
Nabelentzündung	11	0,45	0,53	0,54	0,45	0,53	0,54
Kälberdurchfall	16	1,35	1,09	0,86	1,32	1,08	0,86
Erkrankungen des Verdauungstraktes	**21-29**	**2,60**	**2,75**	**2,81**	**2,45**	**2,50**	**2,59**
Durchfall	21	0,96	0,88	1,17	0,95	0,86	1,15
Pansenübersäuerung, Acidose	23	0,10	0,15	0,18	0,10	0,14	0,18
Fremdkörpererkrankung	24	0,66	0,72	0,58	0,65	0,70	0,57
Labmagenverlagerung	25	0,17	0,12	0,12	0,16	0,12	0,12
Darmverschluss	26	0,17	0,17	0,22	0,16	0,16	0,21
Stoffwechselkrankheiten	**31-35**	**6,04**	**4,83**	**4,40**	**5,65**	**4,51**	**4,23**
Hypocalcemia (milk fever)	31	4,40	3,80	3,49	4,36	3,75	3,47
Acetonämie	33	1,06	0,55	0,59	1,06	0,55	0,58
Fruchtbarkeits- und Abkalbestörungen	**41-49**	**35,12**	**34,47**	**33,16**	**26,14**	**25,46**	**24,67**
Gebärmutterentzündung	41	5,36	4,88	4,69	5,34	4,86	4,68
Silent heat	42	11,32	9,71	8,85	9,59	8,39	7,88
Ovarialzysten	43	11,27	13,05	12,47	9,90	11,36	10,95
Scheidenvorfall	44	0,13	0,10	0,13	0,13	0,10	0,12
Abortus und andere Störungen der Gravidität	45	0,37	0,30	0,36	0,37	0,29	0,36
Schwergeburt	46	0,87	0,74	0,65	0,87	0,74	0,65
Geburtsverletzungen	47	0,13	0,14	0,12	0,13	0,14	0,12
Retained fetal membranes	48	3,36	2,35	2,43	3,34	2,34	2,41
puerperale Erkrankungen	49	2,30	3,21	3,46	2,05	2,50	2,77
Eutererkrankungen	**51-55**	**24,39**	**18,90**	**19,29**	**18,16**	**14,94**	**15,00**
acute Mastitis	51	15,74	12,33	12,43	12,72	10,24	10,17
chronische Euterentzündung	52	6,53	4,68	4,68	5,84	4,38	4,36
Erkrankungen der Euter- und Zitzenhaut	53	0,39	0,22	0,25	0,35	0,19	0,22
Euterödem	54	0,51	0,43	0,34	0,51	0,42	0,33
Andere Eutererkrankungen	55	1,21	1,25	1,59	1,04	1,17	1,45

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Legal basis: law on control of zoonoses and pathogens causing zoonoses (law on zoonoses) 2005

Assignment by the Austrian Ministry of Health to the Austrian Agency for Health and Food Safety (04-02-2009):

„Development of methods to measure and monitor the quantity of antimicrobials applied or dispensed by veterinarians to livestock in Austria“

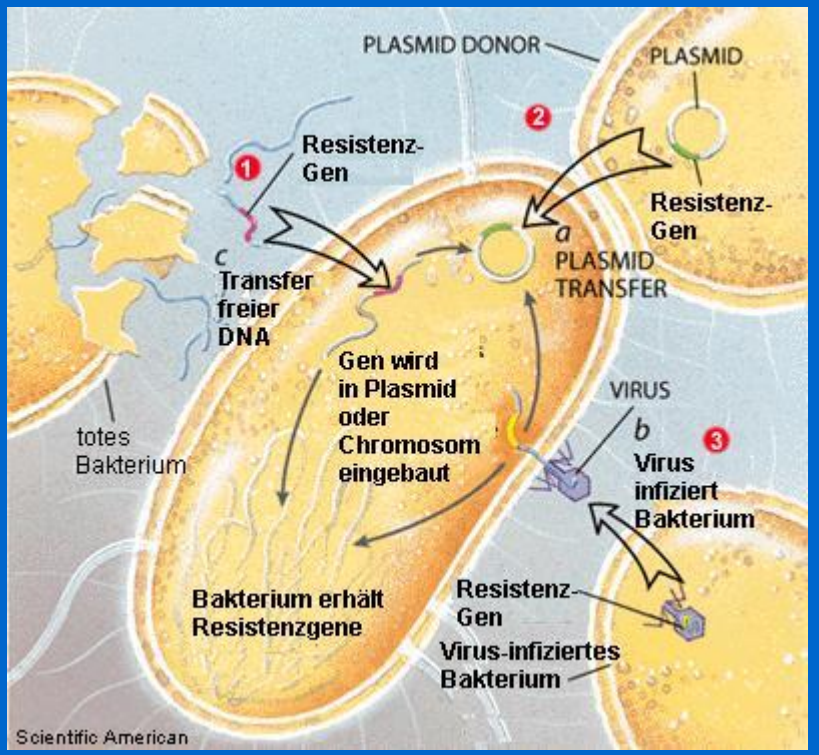
Cooperating partners:

Institut for Pharmacology VetMedUni Vienna

Austrian Poultry Health Service

Practising veterinarians

Antibiotikum



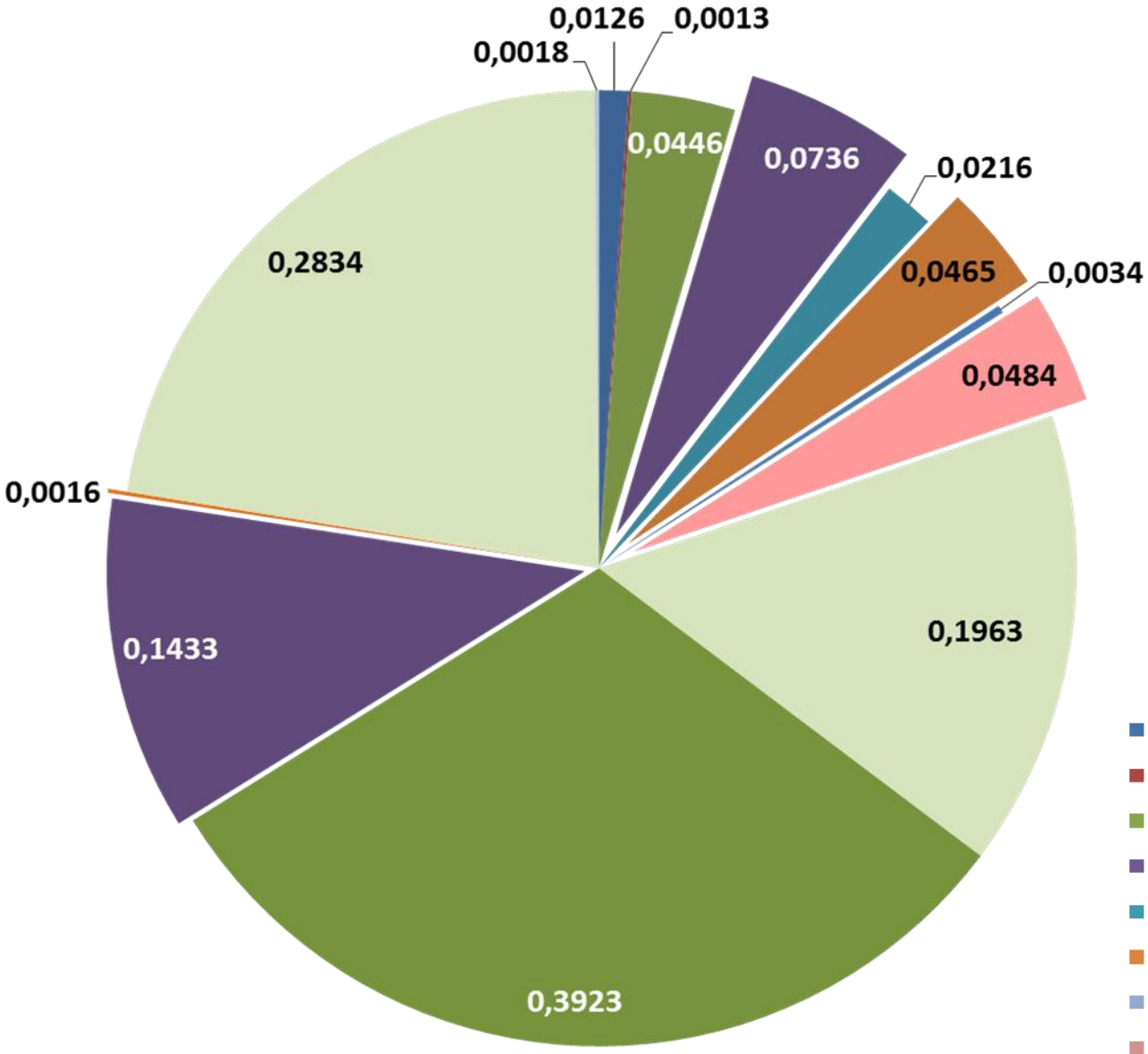
Resistenz

Benefits of recording of diagnostic data veterinarian perspective

Quantity of antimicrobials used - measured values

variable	unit	description of variable
Amount of active ingredient	gram (g)	Amount of active ingredient used given in gram (g).
Prescribed Daily Dose (PDD)	milligram / kg BW / day (mg/kg/day)	Maximum dose of the active ingredient recommended by the manufacturer adjusted by a factor of 0.8 given for each veterinary product in milligram per kilogram bodyweight (BW) per day.
n PDD / LU	n / LU	Number of prescribed daily doses per livestock unit (LU); one LU is consistent with approx. 500 kilogram of bodyweight.

Dairy Cattle: n PDD/LU$_{median}$ (ATCvet QJ01 and QJ51)



Σ_{QJ} = 1,271 PDD/LU Median

Σ_{QJ01} = 0,448 PDD/LU Median

Σ_{QJ51} = 0,822 PDD/LU Median

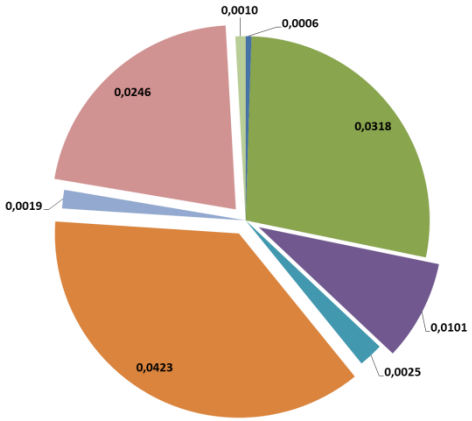
Critically important antimicrobials add up to 0.313 PDD/LU (24,7 % of all PDD´s used).

- Tetracyclines
- Amphenicoles
- Beta-Lactam Antibacterials, Penicillins
- Other Beta-Lactam Antibacterials
- Sulfonamides and Trimethoprim
- Macrolides, Lincosamides and Streptogramins
- Aminoglycoside Antibacterials
- Quinolones and Quinoxaline Antibacterials
- Combinations of Antibacterials
- Other Antibacterials

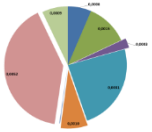
ATCvet QJ01 = antibacterials for systemic use
ATCvet QJ51 = antibacterials for intramammary use

n PDD/LU Median (ATCvet QJ01 and QJ51)

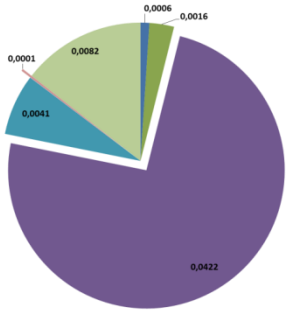
udder diseases, systemic use



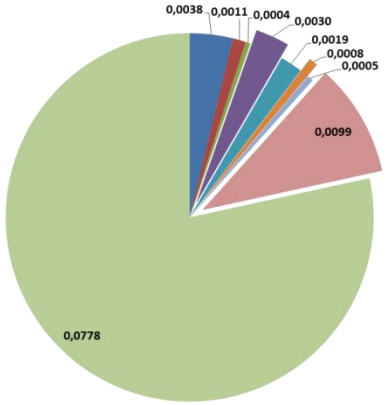
dis. of digestive tract, systemic use



dis. of claws, legs, systemic use

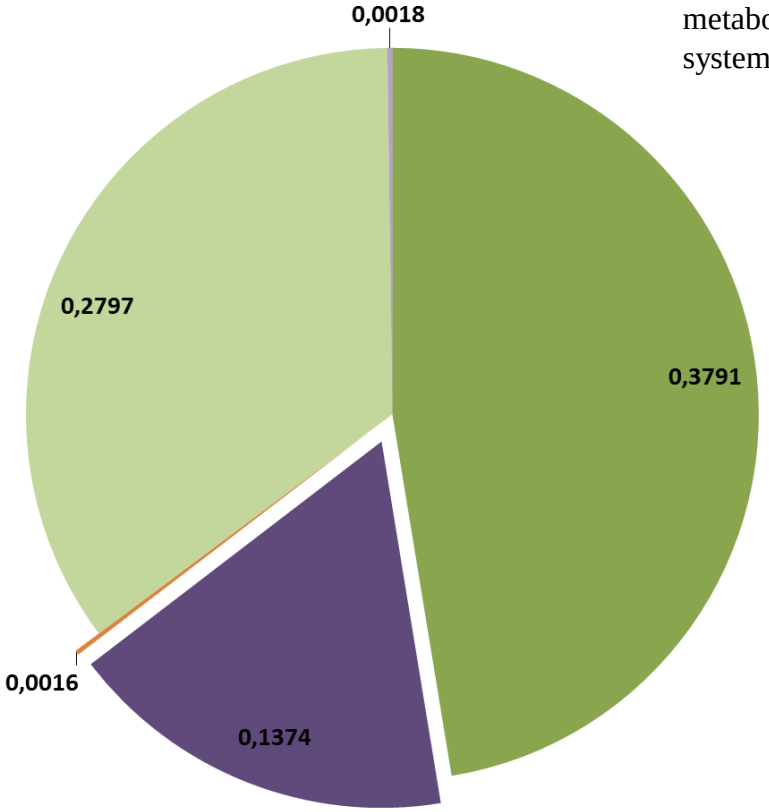


dis. respiratory tract dis., systemic use



dis. In calves, systemic use

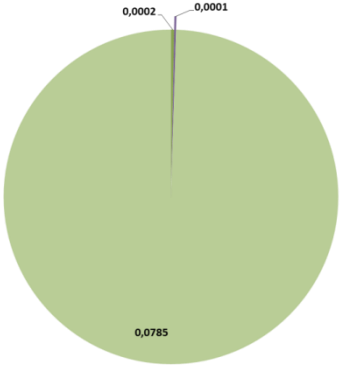
udder diseases, intramammary use



metabolic dis., systemic use

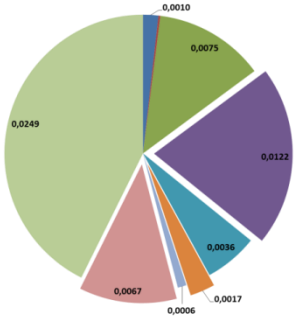
cardiavascular, urinary tract dis., systemic use

dis. CNS, skin, infections, systemic use



infertility, dis. ass. with parturition, systemic use

other diseases, systemic use



- Tetracyclines
- Amphenicoles
- Beta-Lactam Antibacterials, Penicillins
- Other Beta-Lactam Antibacterials
- Sulfonamides and Trimethoprim
- Macrolides, Lincosamides and Streptogramins
- Aminoglycoside Antibacterials
- Quinolones and Quinoxaline Antibacterials
- Combinations of Antibacterials
- Other Antibacterials

Summary

Recording of diagnostic data – presence and future:

- Recording of diagnostic data is integrated into the breeding programs of Austrian cattle breeders.
- Recording of diagnostic data is compulsory for all breeding herds.
- Cooperation of representatives of agriculture, veterinarians and science has proven well.
- New benefits for farmers and veterinarians by electronic data exchange platform for performance, diagnostic and treatment-data.
- Valuable contribution to the safety and the quality of food products from cattle production.
- Recording of diagnostic data is important for improving health and productivity in cattle husbandry.

Benefits of recording of diagnostic data veterinarian perspective

Thank you for your attention!