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ABOUT US

It all started on a small exhibition in Eastern Germany. Johan Hoogendoorn (Dairytop) and Achim Holm (Holm & Laue) talked about their experiences going to different countries and collecting new ideas, building their network and sharing information from the calf industry.

But...where is a good place in Europe to go? And where could they find everything on one spot? It is rather complex to get important and new information in calf rearing and it is necessary collect them from many different places. There are so many exhibitions and conferences for cows but not just for calves. We have been looking for a place to put everything together and give our customers and friends the chance to also use those resources.

Dairytop and Holm & Laue are specialized companies, which are highly interested in new developments in calf raising. Raising calves in Europe developed very fast and is going into a good direction lately, but we could improve the farms even more, if we bring the game changers together and work as team.

The European Calf Conference shall give everybody in the business the chance to come together and network, get all the new information and have the time to ask and discuss. That's what is needed to succeed and to focus on what is important on the farm.

For this reason, we founded the European Calf Conference!

Hello, my name is Lina Scharmukschnis. I grew up in a small village in northern Germany
surrounded by agriculture. I became a Master of Agriculture at the Christian-Albrechts-University of Kiel. I started working for Dairytop over three years ago in sales and calf consulting and I became the General Manager of the European Calf Conference GmbH.

My passion is communication and dairy calves. I like people almost as much as calves and I am convinced I must change both, to improve the way of calf raising.

My name is Holger Kruse. Visiting dairy farms and calf rearing operations in the whole world showed me one thing: There is still a lot to improve!!
I have the pleasure to work with Holm & Laue in Sales and Marketing over the last 17 years. There our task is to improve the calf management of our customers. But technology is not the only key to success. We need to train the people to make best use of the ressources they have. That is why I am very proud to be a part of the European Calf Conference GmbH as General Manager.

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PROGRAM OF THE EUROPEAN CALF CONFERENCE

	Thursday 7.3.2019	*Location*
9:00	Registration	Foyer
9:30	Opening of the European Calf Conference and welcome of all participants	Berlin 1 - 3

	Thursday 7.3.2019 Presentations in English – Berlin 1
9:45	Dr. Rick Dumm „Advantages and possibilities of colostrum pasteurising“
10:30	Dr. Ryan Leitermann „Calf Barn Ventilation: Past, Present and Future.”
11:15	Break and visit of the exhibition
11:45	**Workshops: *please see program of the workshops*** (on the other side of this page)
12:30	Lunch break and visit of the exhibition
13:30	Panel Discussion „Modern calf rearing: Soon in public crossfire?”
14:30	Break and visit of the exhibition
15:00	Hans-Peter Greve „80 up to 2000 cows – Growing with employees.”
15:45	Dr. Tobias Nieschulze “Additional value of calf data – How can modern networks and new analysing possibilities support management decisions?”
16:30	Break and visit of the exhibition
17:00	**Workshops: *please see program of the workshops*** (on the other side of this page)

	Donnerstag 7.3.2019 Präsentationen in Deutsch – Hamburg
9:45	Hans-Peter Greve „Von 80 auf 2000 Kühe – Worauf kommt es bei der Mitarbeiterführung wirklich an?“
10:30	Dr. Tobias Nieschulze “Zusätzlicher Nutzen von Kälberdaten – Wie Netzwerke und Analyse möglichkeiten Entscheidungen unterstützen können.”
11:15	Pause und Besuch der Ausstellung
11:45	**Workshops: *siehe Programm in separater Aufstellung*** (siehe Rückseite)
12:30	Mittagessen und Besuch der Ausstellung
13:30	Podiumsdiskussion „Moderne Kälberhaltung: Bald im Kreuzfeuer der Öffentlichkeit?” (im Banquette Saal - Berlin 2 – 4)
14:30	Pause und Besuch der Ausstellung
15:00	Dr. Rick Dumm „Vorteile und Möglichkeiten des Pasteurisierens von Kolostrum.“
15:45	Dr. Ryan Leitermann „Lüftung im Kälberstall: Früher, Heute und die Zukunft.”
16:30	Pause und Besuch der Ausstellung
17:00	**Workshops: *siehe Programm in separater Aufstellung*** (siehe Rückseite)

	Thursday 7.3.2019 Evening Event	*Location*
18:30	Reception, drinks and get together	Berlin 1 - 3
19:00	Networking Dinner	Berlin 1 - 3

	Friday 8.3.2019 Presentations in English – Berlin 1
8:00	Dr. Christian Koch „Epigenetics – Programming of calves starts at insemination!“
8:45	PD Dr. med. vet. Harald Michael Hammon: “Successful start to life - The importance of colostrum supply and intensive milk feeding for the calf!”
9:30	Break and visit of the exhibition
9:45	**Workshops: *please see program of the workshops*** (on the other side of this page)
10:30	Break and visit of the exhibition
11:00	Dipl.-Ing. agrar FH Bernd Lührmann „Is stringiness really hot? Aspects of an economic heifer raising.”
11:45	Dr. Donald Sockett “Reducing the prevalence of enteric and respiratory disease in dairy calves.”
12:30	Break and visit of the exhibition
12:45	**Workshops: *please see program of the workshops*** (on the other side of this page)

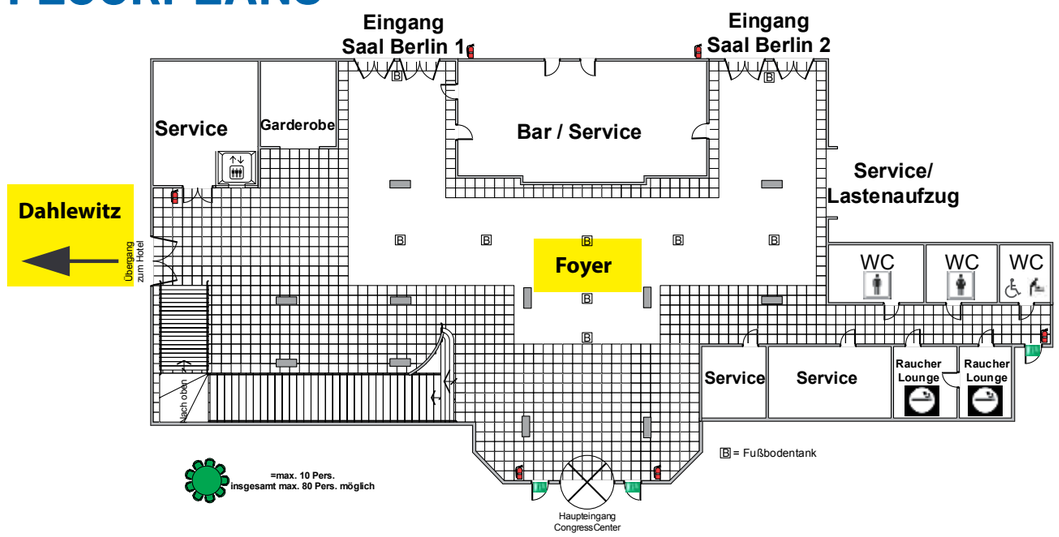
	Freitag 8.3.2019 Präsentationen in Deutsch – Hamburg
8:00	Dipl.-Ing. agrar FH Bernd Lührmann „Ist Geiz geil? Aspekte einer wirtschaftlichen Färsenaufzucht.“
8:45	Dr. Donald Sockett „Reduzierung der Häufigkeit von Darm- und Atemwegserkrankungen bei Milchkälbern.“
9:30	Pause und Besuch der Ausstellung
9:45	**Workshops: *siehe Programm in separater Aufstellung*** (siehe Rückseite)
10:30	Pause und Besuch der Ausstellung
11:00	Dr. Christian Koch: „Epigenetik – Die Programmierung der Kälber beginnt bei der Besamung!“
11:45	PD Dr. med. vet. Harald Michael Hammon „Erfolgreicher Start ins Leben – Die Bedeutung von Kolostrum und intensiver Milchfütterung für das Kalb!“
12:30	Pause und Besuch der Ausstellung
12:45	**Workshops: *siehe Programm in separater Aufstellung*** (siehe Rückseite)

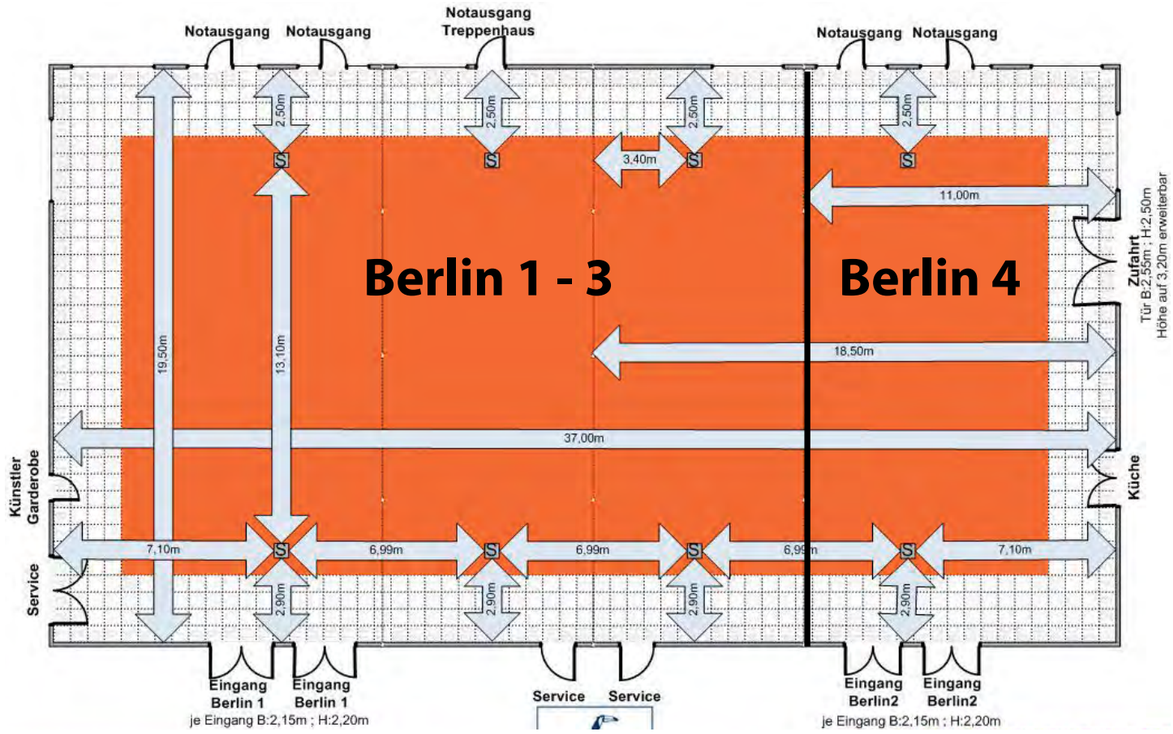
	Friday 8.3.2019 Final words	
13:30	Official closing of the European Calf Conference	Berlin 1 - 3
13:45	Lunch and visit of the exhibition	Berlin 1 - 3 Foyer
15:00	End of the European Calf Conference	

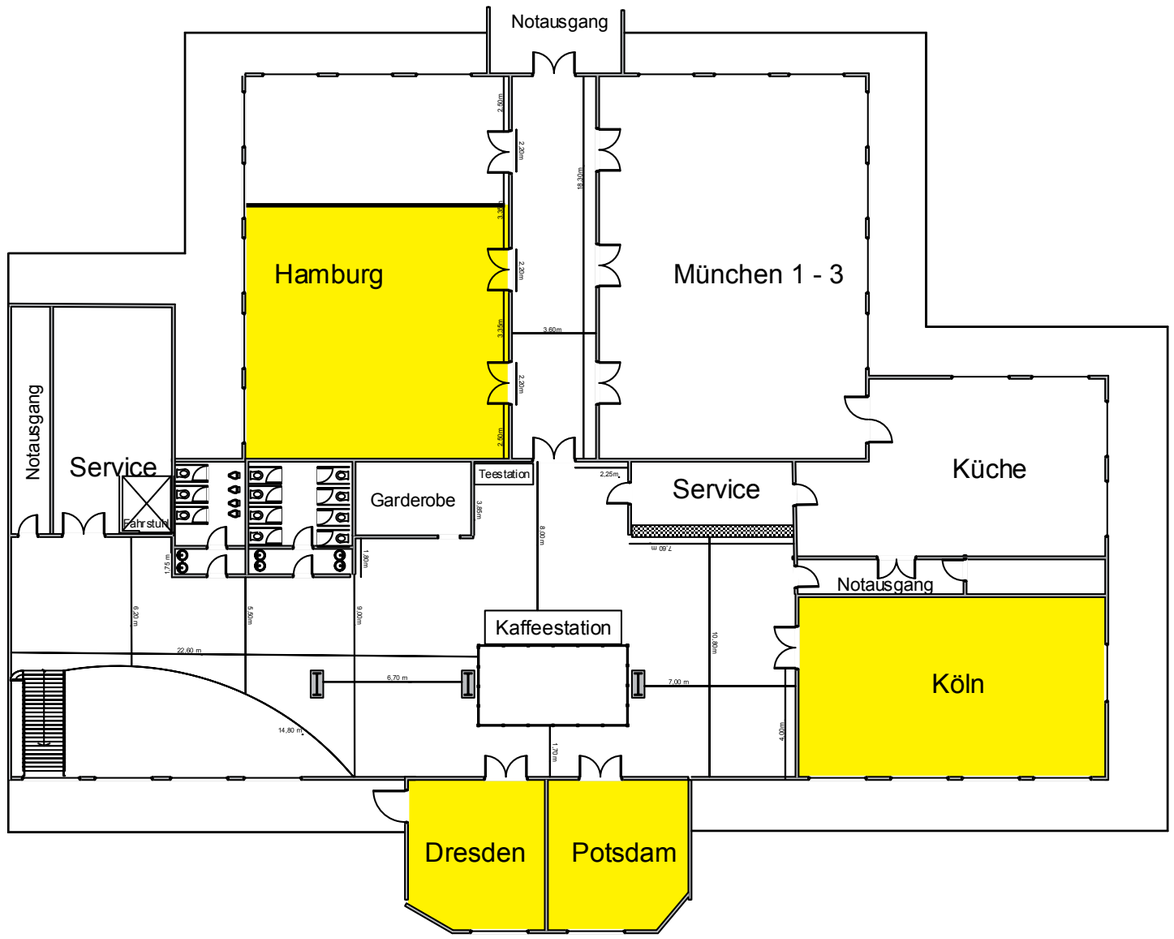
PROGRAM WORKSHOPS

Speaker and theme	Room	7.3. 11:45	7.3. 17:00	8.3. 9:45	8.3. 12:45
Dr. Ryan Leiterman: "Calf barn layout to maximize comfort and performance: What works and what doesn't?"	Berlin 4	English	Deutsch	English	Deutsch
Prof. Dr. Marc Boelhauve: "Optimum colostrum hygiene: Which pitfalls do you need to look for?"	Hamburg	Deutsch	Deutsch	English	Deutsch
Jan Druyts: "Good evaluation of the quality of ingredients of milk replacer."	Dresden	Deutsch	English	Deutsch	English
Dr. Peter Zieger: "Practical lung ultrasound in calves - see more, judge better and decide on evidence basis!"	Dahlewitz	English	Deutsch	English	Deutsch
Johan Hoogendoorn: "Using efficient electrolyte programs with calf diarrhoea."	Potsdam	Deutsch	English	Deutsch	English
Holger Kruse: "Practical weight monitoring for calves – possibilities and advantages."	Köln	English	English	Deutsch	Deutsch

FLOORPLANS







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MODERATORS

Dr. med. vet. Marion Weerda

Dr. med. vet. Marion Weerda, bovine veterinarian and editor at the Landwirtschaftsverlag publishing house in Münster

- born in Lower Saxony, two children (16, 19)
- Studied in Pisa (Italy) and Berlin
- Promotion, additional herd management

Focus:
- Editors Elite and vet-consult, specialist author
- Speaker at the Elite herd manager training
- Elite Academy (training for farmers)
- vet-consult eLearning (training for veterinarians)

Uwe Osthues

Uwe Osthues

Uwe Osthues has started his professional career in agriculture. The practical relevance remains to this day in the foreground of his trade. He has held various positions over the years. Starting with the function as a workshop teacher, over many years of experience in product management, up to various functions in sales. The main time of his work in the last 20 years he has devoted to the milking technique. Also the calf rearing and the associated technical facilities are not foreign. He is currently the Managing Director of Sparex GmbH in Germany and Austria, supplying numerous agricultural machinery dealers with spare parts, accessories and wear parts for agricultural machinery.

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PRESENTATION THURSDAY

Dr. Richard Dumm

25 years of global veterinary experience with dairy cows and calves, combined with 20 years of product development comes together to form a unique insight into the best management practices for raising dairy calves. Dr. Rick enjoys sharing these experiences from his perspective living in Western USA. He is a graduate of the College of Veterinary Medicine, University of Florida, and he travels extensively to lecture about how to raise a better calf. When not working with his own cattle, his family enjoys skiing, hunting and singing together from their home at the base of the Colorado Rocky Mountains.

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Colostrum Management and Pasteurization: An Investment with Dividends

On today's modern dairy, managers are asked to tackle much more than just feeding cows and seeing that they are properly milked. In all of the world there is an increased awareness of the responsibility we have to ensure that calves are properly cared for, treated in a humane manner and protected from illness and climate extremes as we are best able. The dairy industry is also more of a global business than it has ever been. Milk products as well as the animals themselves are being transported throughout the world. Biosecurity must be taken seriously as we work to reduce the transmission of disease pathogens from cow to calf and dairy to dairy. Finally, profitability is a key factor for any business but in these past two years of low milk prices and high feed costs, we must continue to seek out methods to improve cash flow on the dairy.

Colostrum management is the keystone solution for the modern dairy calf. This lecture will discuss the value of colostrum as more than just a warm meal with immune function. Once we have established the importance of colostrum and how to properly collect it, we will then share the keys to proper pasteurization. Immunoglobulins are large, delicate proteins responsible for granting the calf some level of immune function as it begins life. Without proper pasteurization, these proteins and other critical bioactive elements of colostrum can become damaged and lose their function. Without pasteurization we risk spreading pathogens from the cow and her environment to the susceptible calf. It is a critical step in maintaining proper herd biosecurity. Equally important, it is the single most effective management tool that we have to keep the calf free of illness that comes with expensive treatment costs and lifelong consequences.

In this lecture we will discuss the research that has been put forth demonstrating the impact we can have with proper colostrum management as we follow the topic to a deeper level.

What good are the research results if we cannot achieve them on the farm? This lecture will share what methods are working around the world. The attendees will be able to return to their farms and their dairy customers and offer practical advice to reach the goals.

PRESENTATION THURSDAY / WORKSHOP

Dr. Ryan Leitermann

Director of Technical Services for Crystal Creek®, USA

Dr. Leiterman is the Director of Technical Services for Crystal Creek® in Spooner, Wisconsin, USA where he specializes in calf barn ventilation design. He holds degrees in both Agricultural Engineering (University of Minnesota – Twin Cities) and Veterinary Medicine (University of Wisconsin – Madison). After receiving his veterinary license, he practiced dairy and calf medicine in southern Wisconsin until 2012. Dr. Leiterman has designed ventilation systems for calf barns in the United States, Canada and Europe and holds multiple international patents related to ventilation technology.

Calf Barn Ventilation: Past, Present, Future

Agriculture is an industry that is constantly evolving, while also maintaining longstanding views and beliefs. This is no more evident than in calf barn ventilation systems.

Today's calf barn ventilation design guidelines have remained largely unchanged for the past 40 years. Over the same time-period, ventilation equipment has improved dramatically. Review ventilation design guidelines by looking at: where they were, where they are now and where they are headed.

This presentation will challenge the status quo and raise new questions about how calf barn ventilation systems are designed. As it turns out, calves raised in outdoor hutches may hold the key to advancing calf barn ventilation.

Calf Barn Layout to Maximize Comfort and Performance:
What works and what doesn't

Whether calves are fed individually or in a group, the barn should be designed to maximize calf comfort and performance.

Building a new calf barn? Discuss what is new in calf barn floor plans, ventilation systems and construction techniques to improve air quality and calf comfort. Perhaps more importantly, discuss what NOT to do when building a new calf facility. Learn where to invest in worthwhile upgrades and where to cut costs and save money. Leave with practical ideas that you can apply on your own farm.
Remodeling an existing building? Many dairy producers repurpose old buildings into young stock housing. These old buildings can present ventilation challenges such as low ceiling heights, lack of natural ventilation, wind shadowing and beams/other overhead obstructions that make installing ventilation equipment difficult. Learn how to troubleshoot the most common issues encountered when ventilating a retrofitted calf barn and create an environment that supports respiratory health and calf comfort.

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PRESENTATION THURSDAY

Hans-Peter Greve

Hans-Peters family has been milking cows since 1771. In 1992 Hans-Peter moved from West Germany to East Germany. In 2008 they started to build their current operation, Milchhof Rodenwalde. The operation milks 1920 cows, has 1400 young stock and 3200 ha of land. The company employs forty people.
Recently Hans-Peter bought a small dairy plant with two other farmers, where they will process their own milk to cream and skim milk concentrate.
His wife Kathrin and he have three boys (17, 15 and 12 years).

80 up to 2000 cows - Growing with employees

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PRESENTATION THURSDAY

Dr. Sc. Agr. Tobias Nieschulze

Veterinary Microbiologist

Born 1985 in Dortmund, Germany

2004-2006:
Agricultural training

2006-2009:
Study of agriculture (Bachelor of Science)

2009-2011:
Study of agricultural management (Master of Science)

2011-2014:
Doctoral thesis "Real-time location system Series 7000 from Ubisense for behavioural analysis in dairy cows"

2015-today:
Head of research and development software / electronic at Holm & Laue GmbH & Co.KG, Germany

New value from calf data -
How Networking and Analysis will influence Management

Different people on a calf rearing farm have different demands in their daily work:
- Normal work staff need clear instruction what to do and guidance how to do it.
- The team leader or "Calf Manager" would like to track the individual development of the calves to judge the performance and health status of the calves, to correct if things go the wrong way.
- The supervising "Herd Manager" likes good overview and needs aggregated figures to make the right management decisions and sets the right targets.

While working in a calf barn Standard Operations Procedures (SOPs) help to create a constant working routine. These SOPs can be easily integrated in the data management of the farm. In most areas in calf rearing data are automatically generated. Not only on automatic feeders also on MilkTaxis and other tools like weight scales etc.

The calf can be followed in a complete integrated system from birth to weaning. This can include even incidences like disease issues or management practices at the animal, like dehorning. Documentation is the key to complete control and future traceability.

But good data can do even more than that. They also allow to make the right management decisions for the future. Since daily weight gain is closely related to future milk production, the individual development of a calf can be used for early selection: Shall a calf stay for breeding or should it better leave the farm? In this way the individual performance supports management decisions which are normally based solely on the genetic background of the individual.

Take home:
- Technical innovation improves processes
- Integration of SOPs in product software helps to establish and use them
- Analysis of data will continue to be a major topic
- Creating aggregated figures helps to reduce and summarize the data
- Combination of environment data and genetics helps to improve selection

PRESENTATION FRIDAY

Dr. Christian Koch

Head of Department for Ruminants, Feed Production and Feeding Trials, Educational and Research Centre for Animal Husbandry, Hofgut Neumuehle, Germany

2009 – present:
Head of Department for Ruminants, Feed Production and Feeding Trials, Educational and Research Centre for Animal Husbandry, Hofgut Neumuehle

2007 – 2010:
Doctoral Thesis in Animal Nutrition at the Institute of Animal Science, University of Bonn

2002 – 2007:
Study of Agriculture at the University of Bonn
2000 – 2002:
Education as a practical farmer
Research Interests

- Nutritional and metabolic programming in dairy calves
- Dairy calf and cow nutrition
- Metabolic regulation and adaptation in dairy cows in the transition period

Epigenetics – Programming starts at insemination!

Christian Koch[1] and Harald M. Hammon[2]

[1]Bezirksverband Pfalz, Lehr- und Versuchsanstalt für Viehhaltung, Hofgut Neumühle, Münchweiler an der Alsenz; [2]Leibniz-Institut für Nutztierbiologie (FBN), Institut für Ernährungsphysiologie („Oskar Kellner"), Dummerstorf

What is the meaning of epigenetics?

Epigenetics is the study of heritable phenotype changes that do not involve alterations in the DNA sequence. The Greek prefix epi- (ἐπι- "over, outside of, around") in epigenetics implies features that are "on top of" or "in addition to" the traditional genetic basis for inheritance. Epigenetics most often denote changes that affect gene activity and expression, but can also be used to describe any heritable phenotypic change. Such effects on cellular and physiological phenotypic traits may result from external , e. g. environmental factors, or be part of the normal developmental program. The standard definition of epigenetics requires these alterations to be heritable, either in the progeny of cells or of organisms (https://en.wikipedia.org/wiki/Epigenetics).

Alterations in the environment after insemination could affect the offspring epigenome

Early life experiences can program physiological function and health and disease outcomes in later life (Barker et al., 2002; Lucas, 1991). Perturbations and stress in general in the intrauterine environment, e. g. from maternal malnutrition, high metabolic load, elevated body temperature during pregnancy or social stressors, can induce structural and functional changes in the embryo and fetus that may persist through adulthood (Lindström, 1999; McMillen et al., 2005; Fowden et al., 2006). In several species, maternal heat stress (i.e. high ambient temperature) during gestation affects the growth and physiology of the developing young dairy calf (Monteiro et al., 2016b). In dairy cattle, calves born to cows exposed to high ambient temperature during late gestation are lighter and shorter at birth and during puberty. These calves have higher morbidity rates associated with depressed immune competence, and exhibit alterations in energy metabolism and reproductive physiology when compared to those born to cows that were actively cooled (Monteiro et al., 2016a and 2016b; Tao et al., 2012). Moreover, the in-utero heat stressed female calves (i.e. heifers) produce significantly less milk during their first lactation, approximately two years after the developmental insult (Monteiro et al., 2016a). Late gestation is characterized by enhanced muscle growth and fat deposition that contribute to rapid fetal weight gain. In fact, 60% of calf birth weight is attained during the last 2 months of gestation and, during this time, organs undergo functional maturation in preparation for sustaining life outside the womb (Sangild et al., 2000). The liver and the mammary gland are key organs mediating stress effects (in utero heat stress, negative energy balance, high milk yield, inflammation, social stress, etc.) that are associated with physiological development and performance in later life of dairy cattle (Skibiel et al. 2018a; Skibiel et al., 2018b; Tao et al., 2011). Development of the mammary gland begins in the conceptus and although there is little formation of mammary parenchymal tissue in utero, the rudimentary ductal system, on which the functional alveoli later form, develops prior to birth (Knight and Sorenson, 2001). The liver is a key metabolic organ, orchestrating carbohydrate, lipid and amino acid homeostasis to support the energetic demands of maintenance, growth and production. Moreover, the liver serves as an important immune organ (Zhou et al., 2016). The mechanisms through which in utero heat stress in late gestation affects postnatal liver and mammary function have yet to be elucidated, but could be attributed, in part, to impairment of tissue growth during the organ maturation

stage of fetal development. Insults during late gestation can depress cell proliferation in tissues thereby reducing cell number and stunting tissue growth (Harding et al., 1995). Beside the described effects of heat stress, cows and calves are exposed to many stressors in the environment. The season of birth is associated with first-lactation milk yield and season of birth altered insulin sensitivity (Van Eetvelde et al., 2017). Furthermore González-Recio et al. (2012) investigated the effects of presence of lactation and the level of milk yield at insemination on predetermine phenotype at adulthood. Females born to mothers that were lactating while pregnant produced less milk, lived shorter and were metabolically less efficient than females whose fetal life developed in the absence of maternal lactation. The greater the maternal milk yield during embryogenesis, the larger the negative effects of prenatal programming, precluding that the offspring born to the most productive cows fully express their potential additive genetic merit during their adult life (González-Recio et al., 2012).
Influences of the early life environment on phenotypic variation can be mediated by epigenetic modifications that regulate gene expression. The most stable and well-studied epigenetic mark is DNA methylation. In mammals, methylation occurs predominately at CpG dinucleotides that can be methylated or demethylated by developmental signals or environmental cues (Angers et al., 2010). Aberrant methylation patterns occurring during early development may be maintained throughout the life of the animal, and permanently alter tissue-specific gene expression and function (Jirtle et al., 2007). The liver and mammary gland are regulated by epigenetic mechanisms that may be altered by heat stress. Milk synthesis and mammary development are regulated by epigenetic processes in the dairy cow; global DNA methylation within mammary epithelial cells appears to play a role in mammary cell differentiation and maintenance (Rijnkels et al., 2010; Singh et al., 2012). In the lactating cow, re-methylation of the typically hypomethylated casein gene promoter drastically reduces casein mRNA expression and milk protein synthesis during acute udder infection (Vanselow et al., 2006). DNA methylation also plays an integral role in hepatic differentiation and hepatocyte proliferation (Snykers et al., 2009).

Practical recommendations

As described above, all stressors could affect physiology and performance in dairy cattle, which starts at insemination. Therefore, we have to consider about potential stressors in the environment of dairy calves and cows such as high ambient temperature, overstocking, inseminating in peak lactation or in periods of high negative energy balance. In addition, social stressors like grouping and low feed bunk space are important stressors in dairy cows with long lasting effects especially for the embryo and fetus. To control and improve the situation in the barns we should reduce heat stress with sprinklers, fans and shade starting before insemination and not only during the dry period or early lactation. Furthermore, we should reduce overstocking to improve animal welfare, and the effect of variation in daily feed intake, which induced sub-acute ruminal acidosis with detrimental long lasting effects on the cow and their offspring.
In conclusion, each stressor could affect cows and their offspring via epigenetics. If we are not able to control these stressors we contribute to the initiation of negative programming of the young unborn ruminant after insemination with possible long lasting detrimental effects.

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PRESENTATION FRIDAY

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Dr. Hammon is senior scientist at the Leibniz Institute for Farm Animal Biology (FBN) since 2004 and heads the Endocrine Metabolic Regulation Unit at the Institute of Nutritional Physiology "Oskar Kellner". He has studied veterinary medicine in Munich, Germany, and has received his DVM degree in 1993 and his habilitation in 2003 from the University of Bern in Switzerland. Dr. Hammon has authored and co-authored more than 140 peer-reviewed papers.

His present research involves the neonatal and preweaning calf development and its dependence on colostrum supply and milk feeding intensity. Main interests are the effect of colostrum supply and intensive milk feeding on organ development and endocrine regulation of the energy metabolism. In addition, health and welfare aspects of calf rearing management are getting more and more into the focus, pointing out, that only healthy and robust calves guarantee a successful dairy and beef production.

Successful start to life - The importance of colostrum supply and intensive milk feeding for the calf

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Recent surveys on mortality and morbitity rates in calf rearing in Germany and the US still indicate great losses especially during the preweaning period (Tautenhahn, 2017; Quickley, 2018). Besides the great economic losses these high mortality and morbitity rates contradict the aim of increased animal welfare for farm animals and compromise the breeding of robust dairy cows. It becomes obvious from research in the last decade that a productive and efficient dairy breeding starts with a successful calf rearing, including the feeding management of the calves and heifers (Van Amburgh und Soberon, 2013).

Importance of colostrum feeding for calf development

Calf feeding starts immediately after birth with colostrum intake. Bovine colostrum provides newborn calves with high amounts of nutrients and non-nutrient biologically active substances, such as immunoglobulins, hormones, growth factors and maternal immune cells (Blum und Hammon, 2000; Mee, 2008; Ontsouka et al., 2016, Langel et al., 2016). Immunoglobulins can enter the bloodstream directly via the intestinal epithelium during the first hours of life. With the renewal of the foetal intestinal mucosa after birth, the immunoglobulin absorption is blocked. Therefore, a rapid supply of sufficient, high quality and low-germ colostrum to the calves is of crucial importance for the development of passive immunity. Today's recommendations point to the administration of colostrum as early as possible after birth. The intake of first colostrum should be at least 3 litres at the first meal. As long as the calf drinks the colostrum voluntarily, there are no upper limits. It is important that the first colostrum (= first milk after calving) contains sufficient immunoglobulins. A direct relationship between the supply of immunoglobulins and the health status of the calves was confirmed in several studies (Goddon, 2008; Mee, 2008; Quickley, 2018).

Besides the great importance of colostral immunoglobulins for passive immunity of neonatal calves, colostrum has an overall importance for the postnatal development of the neonates. In mammals, factors such as lactoferrin, insulin or insulin-like growth factor (IGF) -I and -II, which are present in high concentrations in first colostrum, affect postnatal development (Blum, 2006; Hammon et al., 2013; Ontsouka et al., 2016). Colostrum feeding stimulates intestinal cell growth and protein synthesis in neonatal calves. The amount of ingested colostrum corresponds with the villus size of the small intestine, leading to a greater villus size in repeatedly colostrum-fed calves (Blättler et al., 2001). Moreover, the villus size depends on nutrient content of the ingested milk. Feeding no colostrum but a milk replacer with lower nutrient content than colostrum reduces villus size more than feeding a milk-based formula, which has a comparable nutrient content as colostrum (Hammon et al., 2012). However, because there is still a greater villus size in colostrum- than in formula-fed calves, other colostral components besides nutrients, such as hormones and growth factors, affect villus growth in neonatal calves (Blättler et al., 2001; Hammon et al., 2012; Ontsouka et al., 2016). The increased absorptive capacity of the small intestine after colostrum feeding contributes to the improved absorption of glucose, helps to maintaining the plasma concentration of glucose immediately after birth and guarantees the glucose supply of vital organ systems (Hammon et al., 2013).

Intensive milk or milk replacer feeding during the preweaning period

After the colostrum period (3 - 5 days after birth) the calf depends on the intake of liquid feed in the form of milk or high-quality milk replacer (MR). Only when the rumen is sufficiently developed to digest solid feed the basal metabolic rate and growth can be generated exclusively by the intake of hay, concentrates and total mixed rations for calves. With conventional feeding strategies, calves are often fed restrictively with milk or MR (e.g. 4-6 l/day) for only a few weeks, whereas calves fed milk or MR ad libitum drink at least twice as much (12-15 l/day; 125 g MR powder/l). Calves fed restrictively with milk or MR are not able to live out their physiological feeding behaviour and cannot exploit their growth potential (Hammon et al., 2002; Frieten et al., 2017; Korst et al., 2017). Recent studies in which the calves were fed intensively with milk or MR over the first weeks of life, partly in the form of ad libitum milk feeding by automatic feeders, show that intensive milk feeding significantly improves the growth and development of the calves (Schäff et al., 2016; Geiger et al. 2016; Frieten et al., 2017). The improved growth development in calves fed intensively with milk is confirmed by the stimulation of the somatotropic axis, the most important endocrine regulatory system for postnatal growth (Schäff et al., 2016; Frieten et al., 2018).

Epidemiological studies indicate an increased milk yield as dairy cows when calves achieve a high average daily gain in early life (Van Amburgh and Soberon, 2013). A high average daily gain in early life, which in preweaning calves can only be achieved by intensive milk feeding, stimulates the proliferation of functional cells, e.g. in the mammary gland, liver and pancreas (Prokop et al., 2015; Geiger et al., 2016; Soberon and Van Amburgh, 2017). Stimulation of the alveolar cells in the mammary gland is a prerequisite for increasing milk yield in the later production phase. Thus, the intensive milk feeding during the preweaning period is an investment for the future.

The intensive milk feeding also has an immediate positive effect on the calves' behaviour. Calves fed a maximum of 6 litres of milk per day show permanent hunger, which is expressed in the form of cross-sucking (Hammon et al. 2002; Korst et al., 2017; Gerbert et al., 2018). The limited milk intake does not satisfy the calves and the simultaneous increase in solid feed intake cannot counteract behavioural anomalies such as cross-sucking. Solid feed is not sufficiently digested in the first month of life; the rumen still has to develop. And in the first 3-4 weeks of life, solid feed intake is very low (Schäff et al., 2016; Frieten et al., 2017). Therefore, a feeding strategy with reduced milk feeding and elevated solid feed intake in the first weeks of life is inappropriate cover nutritional and physiological demands of the neonatal calves. In contrast, calves that are fed at a high milk level (20% of their body weight or ad libitum) right from the start do not show any behaviour that allows the conclusion that the calves are hungry (Hammon et al., 2002; Gerbert et al., 2018).

Intensive milk or MR feeding, if performed for more than 4 weeks, may result in a temporary decrease in solid food intake before weaning. However, this only delays the development of the forestomach system, in particular the rumen, but the rumen villi develop rapidly when solid feed intake increases with the gradual weaning (Khan et al., 2007). In calves that were fed MR ad libitum for either 5 or 8 weeks, three weeks after the reduction of MR, no difference in rumen villi development and the concentration of short-chain fatty acids in the rumen fluid compared to calves that were fed MR restrictively over the entire period could be observed (Gerbert et al., 2017; Schäff et al., 2018). In contrast, calves that were intensively fed with milk or MR during the first 4-5 weeks of life, after gradually returning the milk to the level of the restrictively fed calves, showed in part even higher solid feed intake and a better rumen development (Khan et al., 2007; Schäff et al., 2016, 2018). It can therefore be concluded that intensive milk feeding immediately after the colostrum period does not impair the development of the forestomach system. However, in the case of ad libitum milk feeding over the whole preweaning period, an immediate reduction of the milk intake should be

avoided, as otherwise growth depression can occur during weaning, when not enough solid feed is consumed and digested.

In conclusion, an intensive milk feeding programme, starting immediately after birth with colostrum and transition milk feeding, supports postnatal development and growth of dairy calves, prevents behavioural anomalies such as cross-sucking and promotes raising of robust young animals. Following the principle of animal welfare, all our efforts should be directed towards improving the calf feeding management in such a way that it contributes to successful calf rearing and meets the needs of the calves. At the end this will lead to resilient and well-performing dairy cows.

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PRESENTATION FRIDAY

Dipl.-Ing. Agr. Bernd Lührmann

Born in 1971, is married and has a son. After he finished his agricultural education, he passed the study at the college in Osnabrück (faculty agriculture sciences) with animal production and business economics as focus. After he worked approximately four and a half years as a head of a consultees group at the consultancy circle from the old district Wittlage (registered organization), he captured since July the 1st, 2001 as a business venture consulter at the chamber of agriculture in Lower Saxony. His working focus lies on financing of the economic improvement and the permanent focus of the agriculture operations.

Moreover, he entered from 2007-2013 a lectureship at the college in Osnabrück (department agriculture sciences, lecture herd management). Furthermore, is he the appraiser for the dairy country award of the national association of dairy farming in Lower Saxony (registered organization) (golden Olga), Lower Saxony representative at the DLG working group, top companies, milk production plus member in the DGL committee milk production and cattle farming.

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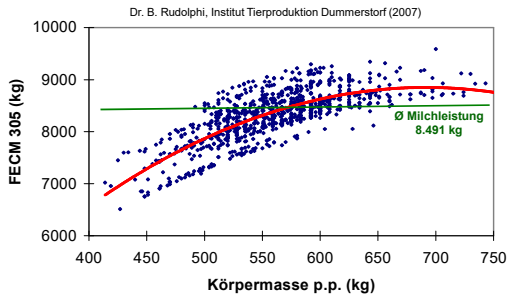
Milchleistung in Abhängigkeit von der Körpermasse p.p. bei Jungkühen

Dr. B. Rudolphi, Institut Tierproduktion Dummerstorf (2007)



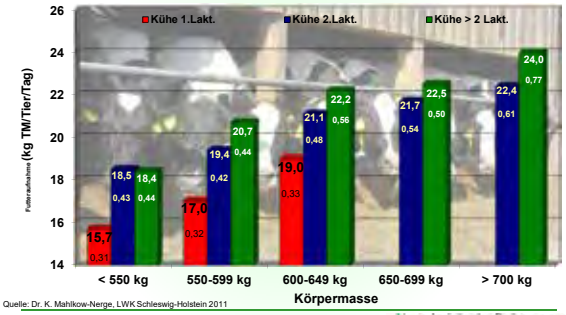
Dipl. - Ing. agrar **Bernd Lührmann**
Unternehmensberater

Bezirksstelle Osnabrück

Landwirtschaftskammer Niedersachsen

Einfluss der Körpermasse von Färsen & Kühen auf die tägliche Futteraufnahme (ges. TM & TM/Besuch)

Auswertung von 100 Kühen bis 100. Laktationstag (34 Färsen, 22 Kühe in 2. Laktation & 44 Kühe >2. Laktation)



Quelle: Dr. K. Mahlkow-Nerge, LWK Schleswig-Holstein 2011

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Ist Geiz wirklich geil?

- **… beim Erstkalbealter?**
  Ja, denn es ist die einfachste und nachhaltigste Möglichkeit die Kosten der Färsenaufzucht zu senken!
- **… in der Fütterung?**
  Nein, denn eine optimale Fütterung ist die Voraussetzung für gesunde Jungtiere und eine hohe Milchleistung
- **… bei der Arbeitserledigung?**
  Ja, durch eine höhere Arbeitseffektivität - nicht durch eine geringere Betreuungsintensität
- **… bei den Gebäudekosten?**
  Nein, denn eine optimale Haltung ist unumgänglich für Gesundheit und hohe Zunahmen

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Landwirtschaftskammer Niedersachsen

Vollkosten der Färsenaufzucht

Ø 26,2 Monate EKA, ohne Wert des Kalbes! WJ 2017/18

*(Daten: eigene Daten 2019; 19 Betriebe, 2.254 PE; * 4% Eigenkapitalzins, BL-Lohnansatz 20 €/AKh, ortsüblicher Pachtansatz)*

Futterkosten	**816 €**	*57 %*
davon Leistungsfutter	*357 €*	
davon Grundfutter	*459 €*	
Gesunderhaltungskosten (TA, Medik.)	**49 €**	*3 %*
Besamungskosten	**35 €**	*2 %*
Sonst. Direktkosten (Wasser, Zins)	**199 €**	*12 %*
Direktkosten gesamt	**1.099 €**	*74 %*
Arbeitserled.-kosten (Lohn- & Lohnansatz)	**355 €**	*18 %*
Gebäudekosten (Unterhaltung, AfA)	**141 €**	*7 %*
Sonst. Kosten (Gebühren, Beiträge uvm.)	**15 €**	*1 %*
Vollkosten	**1.610 €**	***100 %***
davon Faktoransätze*	***325 €***	***21 %***
davon Gewinnbeitrag	***- 1.285 €***	***79 %***

≙ ~ 61,50 €/Monat oder 2,02 €/Tag

54 – 83 €/Monat Spanne

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Warum ein niedriges Erstkalbealter?

1. Reduzierung der Aufzuchtkosten:

Ø Aufzuchtkosten = ~ 60 - 70 €/ Färse und Monat

2. Alternative Nutzung der Produktionsfaktoren:

Arbeitszeit > Management Milchvieh o. Freizeit

Stallplätze > Stallbrache, alternative Nutzungen

Flächen: Futterfläche > Marktfruchtanbau

Nachweisfläche > freie Fläche, weniger Nährstoffabgabe

3. Rentablere Vermarktung überzähliger Färsen:

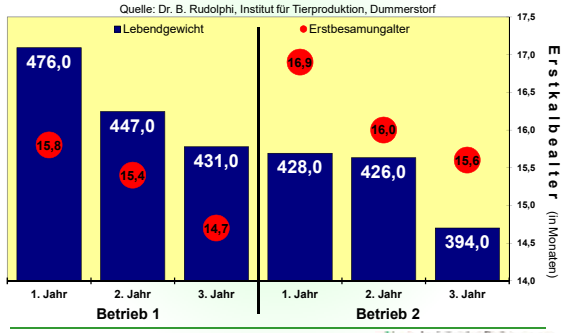
4. Erhöhung der Leistungsbereitschaft der Färsen:

5. Verlängerung der Nutzungsdauer:

Dipl. - Ing. agrar **Bernd Lührmann**
Unternehmensberater
Bezirksstelle Osnabrück
Landwirtschaftskammer Niedersachsen

Effekt der Gewichtsbestimmung auf das Erstbesamungsalter der Färsen auf 2 Praxisbetrieben

Quelle: Dr. B. Rudolphi, Institut für Tierproduktion, Dummerstorf



Dipl. - Ing. agrar **Bernd Lührmann**
Unternehmensberater
Bezirksstelle Osnabrück
Landwirtschaftskammer Niedersachsen

Fazit:

- ✓ **Eine optimale Färsenaufzucht** (EKA 24 - 26 Monate, mit korrespondierender Gewichtsentwicklung):
  - ✓ **erfordert hochwertige Futter- & Produktionsmittel, optimale Haltungsbedingungen & eine intensive Betreuung !**
  - ✓ **reduziert die benötigten Produktionsfaktoren**
  - ✓ **ist die Basis einer hohen Leistungsbereitschaft der Tiere und damit einer wirtschaftlichen Milcherzeugung !**
- ✓ **Steht bei der Färsenaufzucht das Sparen im Fokus, sollte man sich die gesamte Färsenaufzucht sparen !**

Die Jungtiere von Heute, bestimmen den wirtschaftlichen Erfolg der Milcherzeugung von Morgen!

Dipl. - Ing. agrar **Bernd Lührmann**
Unternehmensberater
Bezirksstelle Osnabrück
Landwirtschaftskammer Niedersachsen

PRESENTATION FRIDAY

Dr. Donald Sockett

Veterinary Microbiologist

Dr. Sockett grew up on a dairy farm in Southern Ontario, Canada and graduated from veterinary school at the University of Guelph in 1981.
After graduation, he successfully completed internship and residency
programs in large animal medicine and surgery at the University of Minnesota and Colorado State University, respectively. He obtained his PhD degree from the University of Wisconsin, Madison in 1991.
Dr. Sockett has authored over 100 articles on infectious diseases of dairy cattle in scientific and lay journals. Currently, he works as a veterinary microbiologist/epidemiologist at the Wisconsin Veterinary Diagnostic Laboratory.

Assessing Cleanliness of Calf Feeding Equipment and the Calf's Environment Using Real-Time ATP Monitoring

Introduction

The food processing and health care industry have long-recognized the need for a rapid, screening test that can be employed on-site to verify that surfaces and equipment have been properly cleaned. Proper cleaning means that the cleaning process has removed most of the organic matter thus reducing the probability that pathogenic microorganisms remain attached to the surface that is being cleaned. The concept is that surfaces and equipment must first be cleaned before a sanitizer or disinfectant is applied. Sanitizers and disinfectants tend to be only effective (you can't sterilize dirt) in killing or reducing the number of pathogenic microorganisms when they are applied to clean surfaces. It is important to remember that visually clean surfaces may be contaminated with microorganisms. For example, a study found that only 29% of "visibly clean" hospital wards were found to be clean when checked using ATP bioluminescence or 36.5% when the wards were checked using microbiological techniques.[1]

ATP Bioluminescence

The most common on-site method that is used to measure the effectiveness of the cleaning procedure is real-time detection of ATP. ATP (adenosine triphosphate) is the gasoline or fuel that all living cells (plant, microbial, animal) use for metabolic reactions. Dry surfaces or water samples can be tested. After collection, the sample is exposed to a solution that contains a buffer, lysis reagent (ruptures the cells and releases ATP), magnesium, and a luciferin/luciferase reagent.[2] The bioluminescent reaction occurs in only a few seconds and is driven by ATP. ATP provides the energy or "gasoline" that is used by the luciferase enzyme to produce photons (light) from the substrate (luciferin). The intensity of photons produced by the bioluminescent reaction is measured with a luminometer and is reported as relative light units (RLUs).

ATP Meter (Hygiena SystemSure Plus™ luminometer)

The meter (luminometer) is used to detect ATP that is found in organic material. Typically, organic material is composed of a mixture of microorganisms and other non-microbial materials such as animal and plant cells which includes some foods (milk) etc. Numerous studies have shown tremendous variability when investigators try to correlate ATP levels with bacterial counts because there is a great deal of site to site variation in how much of the organic material is composed of viable microorganisms.[1-6] However, if very little ATP is found the surface is considered clean and it correlates quite well with low bacterial counts.1-6 Therefore the ATP meter should only be used as a tool to assess the effectiveness of the cleaning process and not whether there are harmful numbers of pathogenic microorganisms present on the surface being tested. Once it has been verified that a surface has been properly cleaned, than it is only necessary to make sure that the correct sanitizer or disinfectant is being used properly at the right concentration.

Previous work at the Wisconsin Veterinary Diagnostic Laboratory has determined that clean calf feeding equipment (bottles, nipples, buckets, esophageal feeders etc.,) should have a total bacterial count of ≤ 1,000 cfu/mL when one square inch of surface area is swabbed. One thousand colony form units (cfu) correlates to an ATP meter reading of approximately 100 relative light units (RLU).4 The ATP meter cannot be used to assess the cleanliness of raw milk and colostrum because milk and colostrum contain large amounts of nonbacterial ATP.[7]

Currently, I recommend that one square inch of dry surface area be checked for cleanliness using the Ultrasnap™ ATP surface test. Water samples can be tested using the Aquasnap™ water sampling device. Samples are analyzed with the Hygiena SystemSure Plus™ luminometer.

The following guidelines should be used to assess the cleanliness of calf feeding equipment, drinking water and the calf's environment. These guidelines may change over time as field data is accumulated and analyzed.

Type of Sample	Goal RLU*	Acceptable RLU*	Borderline RLU*	Unacceptable RLU*
Potable Water	< 5	< 10	≤ 20	≥ 20
Drinking Water Calf Buckets	< 100	< 200	< 500	≥ 500
Calf Feeding Equipment	< 50	< 100	< 200	≥ 200
Calf Pens**	≥ 90% reduction	≥ 80% reduction	≥ 50% reduction	≤ 50% reduction
Calf Barns**				
Livestock Trailers**	≥ 90% reduction	≥ 80% reduction	≥ 50% reduction	≤ 50% reduction

*Relative Light Units
** Reduction in RLU's when occupied pens, calf barns, livestock trailers are compared to ones that have been cleaned. Samples should be collected from a dry surface within 20-30 minutes after cleaning or disinfection.
Note: Hygiena recommends that all surfaces with a RLU value of 2.0 or higher be re-cleaned in food processing plants when one square inch of dry surface area is swabbed.

References

1) Griffith C.J., R.A. Cooper, J. Gilmore, C. Davies, M. Lewis. An evaluation of hospital cleaning regimes and standards. J of Hospital Infection. 2000. 45: 19-28.
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7) P.J. Samkutty, R.H. Gough, R.W. Adkinson, P. McGrew. Rapid assessment of the bacteriological quality of raw milk using ATP bioluminescence. J of Food Protection. 2001. 64: 208-212.

Appendix A: Proper Care and Use of the ATP Meter

1) The Ultrasnap™ swabs and Aquasnap™ water sampling device should be stored in a household refrigerator.
2) The swabs and water sampling device should be warmed up to room temperature prior to use. The swabs and water sampling device are stable at room temperature for 1-2 days. The swabs cannot be kept at a temperature warmer than 80 °F.
3) The Ultrasnap™ swabs should be used to sample dry surfaces and the Aquasnap™ water sampling device used to sample drinking water and pasteurized waste milk.
4) The Ultrasnap™ swabs cannot be used to sample surfaces that are wet with sanitizers and disinfectants because they will inhibit the luciferase enzyme. Bottles, nipples and buckets that are wet with sanitizers/disinfectants should be allowed to air dry for 15-20 minutes before they tested.
5) The Aquasnap™ water sampling device cannot be used to test raw milk and colostrum because they contain bovine so-

matic cells. However, pasteurized waste milk can be tested.
6) Turn the ATP meter on and allow it to self-calibrate for 60 seconds.
7) Vigorously swab one square inch of surface area using the Ultrasnap™ swabs. It is important to rotate the swab a minimum of two to three times while swabbing the dry surface.
8) Immediately after swabbing place the swab back into its container and break the diaphragm. Gently pinch the bulb of the swab thus ejecting the buffered solution into contact with the tip of the swab. Gently tap the swab tip against your wrist 5-10 times thus ensuring the tip of the swab is fully immersed in the buffered lysis solution.
9) Within 15-20 seconds place the entire swab in the ATP meter.
10) Close the lid of the ATP meter and press the start button.
11) It is very important to hold the ATP meter in a fully upright position while taking your readings. Do not hold the instrument at a 45 degree angle or horizontal position.
12) You will notice a 15 second count down after you push the start button.
13) Record your results as soon as you get the R.L.U. reading.
14) When using the Aquasnap™ water sampling device, collect the pasteurized waste milk and water sample just before it is fed to the calf.

FÖRSTER TECHNIK®

CalfRail - mit weniger Aufwand zu gesünderen Kälbern!

Praxisvideo:

OPTIMALE FÜTTERUNG
- bis zu 8 mal täglich
- optimal temperiert
- in altersgerechten Portionen

BESTE KÄLBER
- bessere Verdauung
- frühes Wachstum
- weniger Erkrankungen

HÖCHSTE EFFEKTIVITÄT
- weniger Arbeitsaufwand
- flexiblere Arbeitszeiteinteilung
- höchste Leistungsveranlagung

Förster-Technik GmbH info@foerster-technik.de 07733/9406-0 foerster-technik.de facebook.com/foerstertechnik

WORKSHOP

Dipl.-Ing. Agr. Holger Kruse

Head of Marketing at Holm & Laue GmbH & Co.KG and General Manager at ECC GmbH

1985 – 1987:
Agriculture apprenticeship

1987 – 1991:
Additional education and study trips in agriculture

1991 – 1995:
Study of agriculture at the University of Applied Science Kiel

1995 – 2002:
Area Sales Manager Lohmann Tierzucht in Central Eastern Europe

since 2002:
Sales and Marketing manager at Holm & Laue
Main activities:Ryan

- Marketing,
- advertisement,
- Sales organisation,
- project planning with key-accounts and
- training of international sales partners

seit 2018:
General Manager of the European Calf Conference

Practical weight monitoring for calves – possibilities and advantages

"You can't manage what you don't measure!"

This wise quote by the management guru Peter Drucker (1909 – 2005) applies to all areas of economic activity, and to agriculture. But many decisions are still based on human instinct.

This is also true for calf rearing: the goal of a daily increase from 800 – 1,000 g is accepted by many farmers and is often pursued. We are now aware that calves which grow faster due to intensive rearing will produce more milk in the future. This effect is called metabolic programming.[1]

But it is not possible to determine the precise weight of the calves without weighing them regularly. Fewer than 12% of farms weigh the calves during the milk phase. And only 9% of farms weigh the calves at least twice[2]. This means that 91% of farms do not ascertain the daily increase in weight of their calves and thus have no information about the individual performance of their calves. How do these farms intend to make important decisions about feed strategies or the selection of animals?

In this article, you will find out more about the different methods of weight recording and their benefits for successful calf rearing.
There are basically three ways of determining the weight of the calves:

a) Measuring tapes
b) Mechanical or electronic animal weigh scales
c) Integrated scales in automatic calf feeders

Calf measuring tapes and barn charts

The easiest and most cost-effective method of recording animal weights is with measuring tapes which measure the animal's girth. The weight can be simply read off a scale on the measuring tape and recorded on barn charts. It is necessary to bear in mind that the weight is, only an estimate. But if calves are repeatedly measured with the measuring tape, the calculated increases are definitely informative.

[1] See also: "Metabolic feeding of calves on automatic feeders" Int. Dairy Topics 15.6. (2016)
[2] Our own research in an international survey of 424 farms (2016)

It is important to take measurements several times during the milk phase (at birth, after 4, 8 and 12 weeks). This is the only way to get a complete image of the development of the calf.

The weights are then entered on barn charts and compared with the targets.

Mechanical or electronic animal weigh scales

Animal weigh scales can record the weight more accurately. Here too, it is necessary to weigh the calves several times during rearing. As with the measuring tape, the values should be recorded on a barn chart and compared.
Newer electronic animal weigh scales can be equipped with RFID antennae, record the weights and then store them automatically for the relevant calf. The data can often be exported and then further processed.

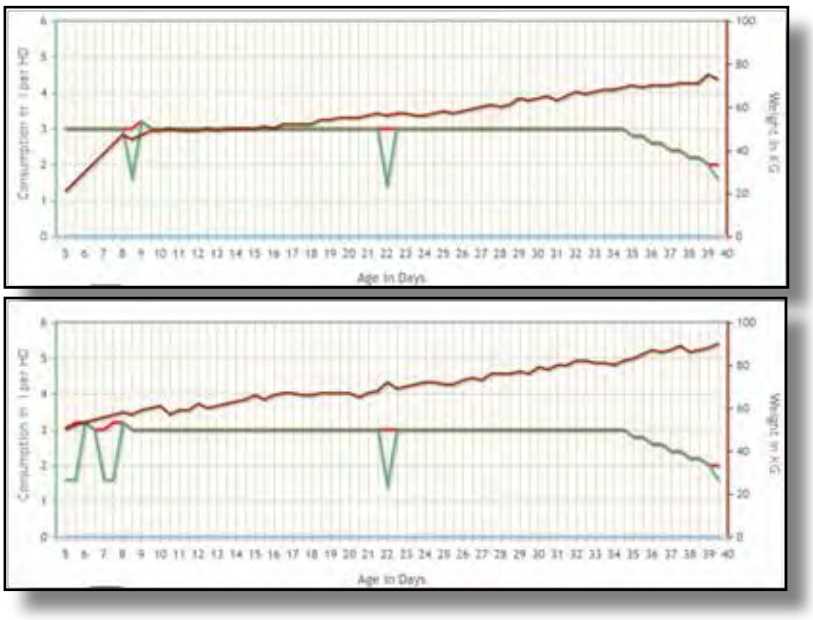
The data is much more convenient and informative if it is transferred automatically to management software. This makes the actual weighing work much easier for the staff. There are already systems on the market which allow the entry of additional information during weighing. When the birth weight is recorded, information on the calving process, colostrum intake etc. is entered directly into the terminal of the animal weigh scales. Thus, important information is stored, which can later be supplemented in the software by other information from calf feeders or MilkTaxis and holistically analysed.

Integrated scales in automatic calf feeders

The most comprehensive weight information is provided by animal weigh scales which are integrated directly into the feeder station of calf feeders. At each visit, the weight of the calves is recorded and extensive data records are created which provide information about the development of the calves on a daily basis.
As calves which are suffering from diarrhoea instantly lose weight, even though they are still drinking really well, it is possible to identify these calves more quickly via the alarm list by weight than via the alarm list relating to milk consumption. Severe cases of diar-

rhoea can often be avoided by an early treatment, reducing the use of medicine.
The second important reason for equipping a calf feeder with weigh scales is the possibility of weaning the calves on the basis of their individual weight development. By this method, calves which consume concentrate and forage at an early stage are weaned more quickly. This saves the cost of milk replacers or whole milk and promotes the subsequent development of the calves into ruminants.
Furthermore, the animal weigh scales, in combination with management programs and analysis software, provide very detailed information about the future performance of the calves in their evaluation. Various investigations on the subject of "metabolic programming" show that calves with a high feed intake and an above average growth later also have a higher milk output during lactation. Thus, Soberon et al. have found out that 85 – 111 kg more milk is produced later during lactation for every 100 g of increased daily weight gain as a calf.[3] So if the calves grow by 1000 g instead of 600 g per day, 450 g more milk can be expected in their first lactation.
Thus, in addition to the genetic value of the calf, the information on the animal weight provides additional important information with regard to the following question: which heifers will remain on the farm to be reared and which animals will be sold? Particularly in times when a conservation of resources and environmental constraints often raise the question of whether all animals should be reared, these additional selection parameters are becoming increasingly important.
It is also important to find out when the calves have grown. In the graph below, you can see the feeding and weight trajectories of two calves. Both calves were unremarkable with regard to their consumption and almost always consumed their full quantity. But it is clear that the top calf weighs just 75 kg at the end of the rearing, whilst the bottom calf ends the milk phase with a weight of approx. 90 kg. The first calf gained almost no weight in the period up to 20 days, whilst the second calf constantly grew at a rate of approx. 900 g / day. The first 3 – 4 weeks in the life of a calf are decisive for the metabolic programming and the early udder development. Thus, the second calf should clearly be preferred over the first calf in the selection for the future dairy herd.

These points show that the quote from Peter Drucker is more topical than ever. It is rarely good to make management decisions based on human instinct. Choosing options based on little information is no better. In calf rearing, a lot of information must be gathered to set the right course on the farm. "Calves are the future of the farm!" says every second publication on the subject. Let us finally begin to act accordingly!



Holger Kruse

[3] Fernando Soberon, Cornell University, June 2012; http://www.ncbi.nlm.nih.gov/pubmed/22281343

WORKSHOP

Prof. Dr. Marc Boelhauve

Veterinary Microbiologist

Area of Expertise:
Agricultural biotechnology and animal hygiene
Professional background:

- since 2008: Professor of Agricultural Biology and Agricultural Biotechnology at the faculty of Agricultural Economics at FH Südwestfalen, Germany
- 2003-2008: Research assistant at the Department of Molecular Animal Breeding and Biotechnology at the faculty of Veterinary Medicine, Ludwig-Maximilians-Universität Munich
- 2000-2003: employee at the Bayerischen Forschungszentrum für Fortpflanzungsbiologie GmbH (Bavarian Research Center for Reproductive Biology)

Education:

- 2005-2007: study of business administration
- 2002: Doctorate, subject: "Investigations into the development of a method for the separation of sperm in X- and Y-chromosome-bearing fractions"
- 1994-1999: study of veterinary medicine

Main tasks in the field:
Teaching and research in the field of production of agricultural products, in particular

- animal hygiene
- parasitology
- animal and consumer health

Teaching and research in the field of plant and animal biotechnology, in particular of reproductive biotechnology and biosafety of genetically engineered products

Einflüsse auf die Kälbergesundheit

Haltungsfehler
- Gestaltung Kälberbox
- Positionierung Box
- Luftführung
- Temperatur
- …

Fehlende bzw. unzureichende Impfungen
- Muttertier
- Kälber in den ersten Lebenswochen

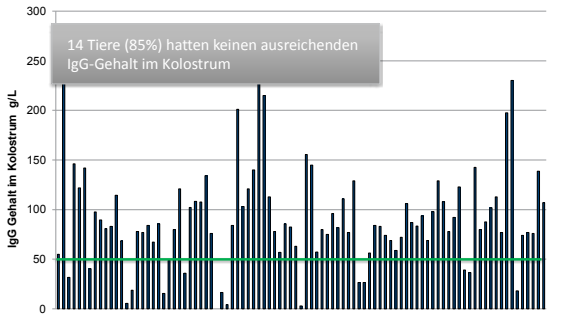
Unzureichende Erst- und Folgeversorgung
Kolostrumgabe:
- Zu spät
- Zu geringe Menge
- Ungeeignete Qualität

Versorgung bis Tag 14:
- Verträänken von AB-Sperrmilch
- Wassermenge
- …

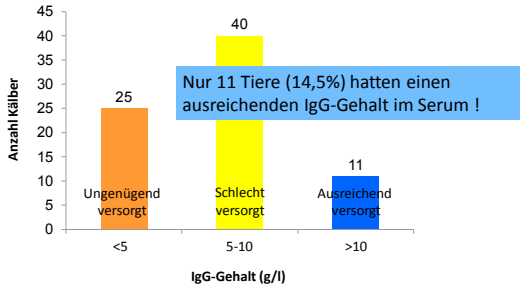
Hygienische Defizite
- Geburt
- Einstreu
- Melkkanne
- Tränkeeimer
- Tränkenuckel
- R+D
- Wasserqualität
- …

…eine Menge Stressfaktoren für ein junges Lebewesen!

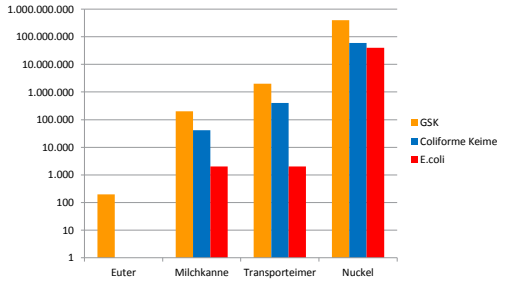
IgG Gehalt im Kolostrum (n = 94)



IgG Gehalte im Serum (n = 76)



zzgl. coliforme Keime und E.coli: Verlauf der Keimgehalte vom Euter zum Nuckel

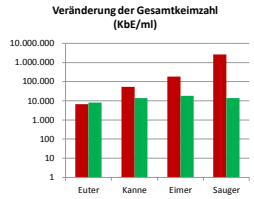


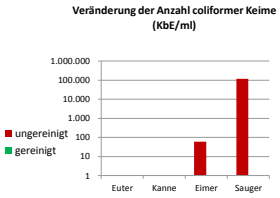
Quelle: K. Asseburg, FH SWF, modifiziert

Tränkeutensilien reinigen – lohnt sich der Aufwand?

Mikrobiologische Untersuchung des Kolostrums über mehrere Stationen vom Euter bis zum Kalb in einem Betrieb

1. Probe: Ist-Situation ohne Reinigungsmaßnahmen
2. Probe: Reinigung der Kannen und Nuckeleimer





Quelle: Bachelorarbeit Kathrin Asseburg (2018/19)

Tränkeutensilien reinigen, lohnt sich der Aufwand?
Qualitative mikrobiologische Analytik

ungereinigt

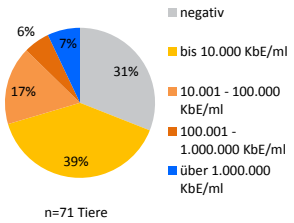
Euter:	Kanne:	Transporteimer:	Sauger:
KNS KNS Strep. agalactiae	KNS ~~KNS~~ ~~Strep. agalactiae~~ + Enterococcus faecalis + Lactococcus lactis + KNS + KNS	~~KNS~~ ~~KNS~~ ~~Strep. agalactiae~~ Enterococcus faecalis Lactococcus lactis KNS KNS	~~KNS~~ ~~KNS~~ ~~Strep. agalactiae~~ Enterococcus faecalis Lactococcus lactis KNS KNS + KNS + weiterer Umweltkeim

gereinigt

Euter:	Kanne:	Transporteimer:	Sauger:
KNS	KNS	KNS	KNS

Keimgehalte der Kolostralmilch aus Milchkannen – Verlauf und Ursache

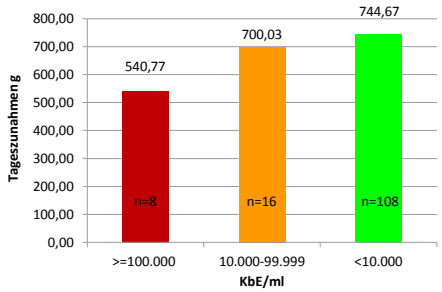
Negative Kolostral-milchproben [bzgl. coliformer Keimnachweise]



n=71 Tiere

Rienhoff et al., FN 46/2017, FH SWF

Einfluss coliformer Keime auf die Tageszunahmen in den ersten 14 Tagen (Folgeuntersuchung in 2017)



ERgebniszusammenfassung

TGZ (g)		Länge der Vollmilch-Tränke (d)	Vertränkte Menge	Abstand Geburt Tränke	Brix (%)	IgG Blut (mg/dl)	Eisen (µmol/l)	GKZ 1. Mahlzeit (KBE/ml)	E. Coli ja/nein (%)	Erkrankungen vorhanden ja/nein
> 850	µ	14	3,00	1,98	23,3	1506	33,9	20.000	13,95	0,07
>600 -850	µ		2,78	2,47	21,6	1464	17,8	20.000	13,51	0,14
>450 -600	µ		2,50	2,33	21,7	1382	14,1	28.000	29,55	0,22
bis 450	µ	5	2,68	2,68	20,3	1159	19,8	41.000	25,00	0,28

µ = arithmetisches Mittel

Warum sind die ersten Lebenswochen so wichtig?

- „**Forty Fit**“ (seit Mitte 80er Jahre, USA)
- Körperwachstum des Kalbes erfolgt in den **ersten 40 Tagen** nach der Geburt hauptsächlich auf Basis von **Zellvermehrungen durch Teilung** (hyperplastisches Wachstum)
- Danach erfolgt das Körperwachstum auf **Vergrößerung der vorhandenen Zellen** (hypertrophes Wachstum)
- Dies bedeutet, dass die Stoffwechselkompetenz eines Tieres v.a. von den ersten Lebenswochen abhängig ist
- D.h. **lebenslang**!

Investitionen in die Kälberaufzucht (v.a. Zeit und Hygiene) sind Garanten für den zukünftigen wirtschaftlichen Betriebserfolg!

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Weitere Informationen unter www.timetovaccinate.de

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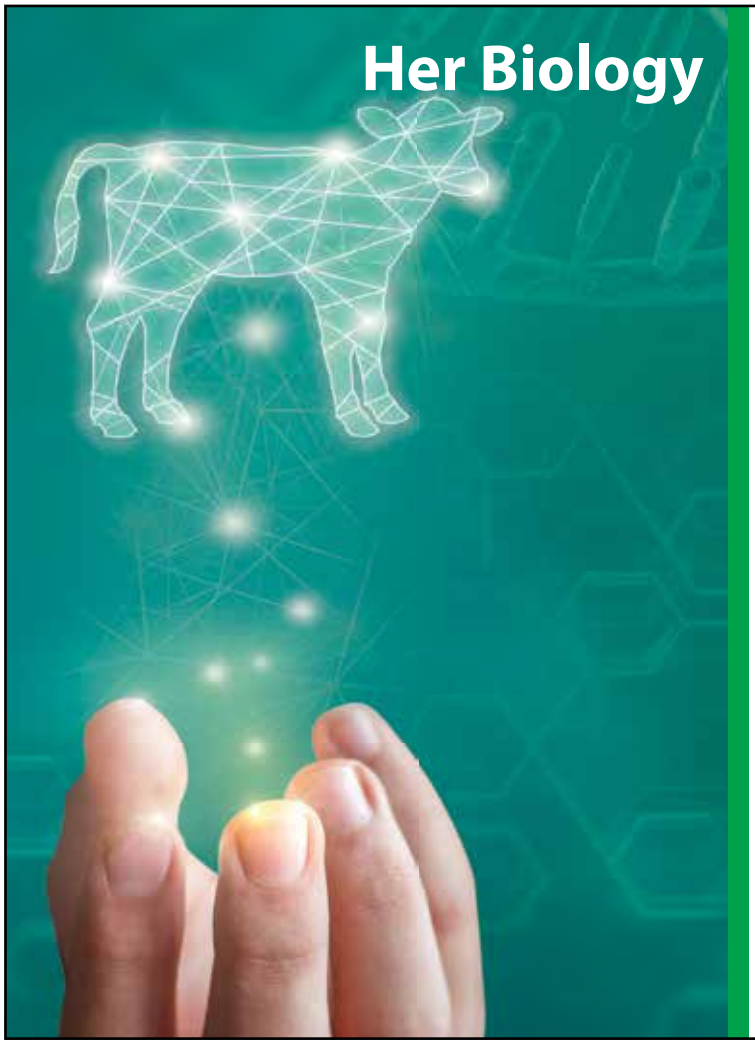

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WORKSHOP

Johan Hoogendoorn

I grew up on a dairyfarm in the Netherlands and also studied agriculture. Later my family moved to eastern Germany and ran a dairyfarm there.
I found my passion in calf raising and decided to found Dairytop BV a company who does specific calf consulting on the farm and sells all the products in a very good quality you need to raise a calf.
Since years I travel through Europe and the world, to see the newest things around calf raising and see foreign farms because dairy calves are my passion.

Using efficient electrolyte programms with Calf diarrhea.

Calf diarrhea or scours continues to be a major health problem for dairy farms in Europe.
The latest studies showed us that greater than 60% of all mortality in calves less than 2 months of age is a direct result of scours.
A lot of dairy farmers and also veterinarians do not know the right way to feed or treat the dairy calves when suffering scours.
The right way of treatment is determative to save the calf's life either with electrolytes or antibiotics when needed.
Diarrhea has several profound metabolic effects on the calf including dehydration, a decrease in the PH of their blood (acidosis) and a loss of energy.
Current knowledge indicates that an oral electrolyte solution must satisfy the following four requirements.
Supply sufficient sodium to correct dehydration, provide agents that facilitate absorption of sodium and water from the intestine.
Provide an alkalinizing agent to correct accidosis, and provide energy.
In case of diarrhea check your management and hygiene as well.
85% of diarrhea is caused by faillure in management and causses unnecessary financialy damage to your dairyfarm.

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WORKSHOP

Dr. Peter Zieger

Ruminant Technical Support and Sales Manager

As Technical Support and Sales Manager serving German-speaking countries and Hungary, Dr. Peter Zieger works to support and grow Diamond V's ruminant business.
Dr. Zieger was born and raised in Grossostheim, Germany, on a family-run dairy farm. He studied veterinary medicine at the University of Giessen (Germany) and Ecole veterinary de Nantes (France). After completing his studies, he worked for 11 years in mixed animal veterinary practice as an associate. He then joined the animal pharmaceutical industry at Pfizer/Zoetis, staying with the company for the next 10 years. While with Pfizer/Zoetic, he held several positions, working as a Technical Manager and as National Veterinary Specialist for dairy cows.
Since 2000, Dr. Zieger has also worked as an independent dairy advisor and journalist. He is also a founding member of the Innovationsteam Milk Hessen, a non-profit consulting organization of economists, nutritionists and architects, supporting the dairy industry. Dr. Zieger is based near Frankfurt, Germany.

Der Lungenultraschall bietet die Möglichkeit, Erkrankungen früher zu erkennen.

Licht ins Dunkel bringen

Eine hohe Dunkelziffer an Lungenerkrankungen und damit Lungenveränderungen sorgt für einen schlechten Start in die Laktation. Mit der neuen Diagnosetechnik des Lungenultraschalls soll hier Licht ins Dunkel gebracht werden.

Von Dr. Peter Zieger

- Jedes siebte Kalb weist erhebliche, von außen nicht sichtbare Lungenveränderungen und -schäden auf.
- Die Folge ist eine um 110 kg geringe Milchleistung in der ersten Laktation.
- Um hier Erkrankungen früher zu erkennen, entwickelte Prof. Theresa Ollivett den Lungenultraschall.

Theo Ribben ist ein sehr engagierter und gut organisierter Landwirt, der mit seiner Holsteinherde seit Jahren ein hohes Leistungsniveau ermelkt. Nur die Kälber machen ihm etwas Sorgen. Das Altgebäude in beengter Ortslage war durch den Stallneubau leer geworden und dient seither als Kälber- und Jungviehstall. Die Kälber haben oft Husten, Tränen- und Nasenausfluss, manchmal mit Fieber, oft auch ohne. Und in der Tat, er erkennt nur gut die Hälfte der tatsächlich lungenkranken Kälber.

So wie ihm geht es vielen Landwirten. Die Kälber stehen oft aus praktischen Gründen und betriebswirtschaftlichen Empfehlungen in den „falschen" Ställen. Denn das Credo ist meist: Leerraum darf nicht entstehen, da er abbezahlt ist und

Fotos: Zieger, Pahlke

ein Neubau für viele sich entwickelnde Betriebe derzeit kein Thema ist.

Doch das für Kälber ungeeignete Stallklima verlangt einen hohen Preis: Jedes siebte Kalb, so bewies es die Universität Guelph, weist erhebliche, von außen nicht sichtbare Lungenveränderungen beziehungsweise subklinische, von außen nicht erkennbare Lungenschäden auf. Die Folge ist bereits nach einem einzelnen unerkannten Krankheitstag, wie die Cornell-Universität herausfand, eine um 110 kg geringe Milchleistung in der ersten Laktation.

„Kälber stehen oft in den falschen Ställen."

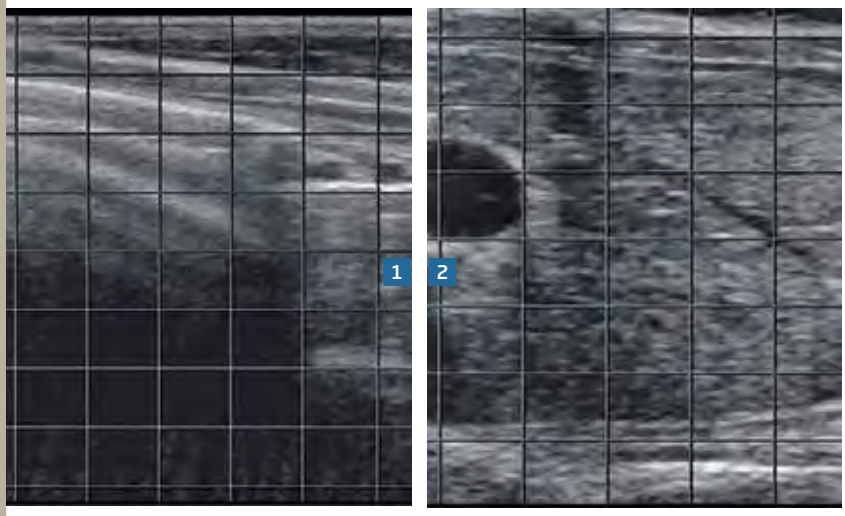
Problematisch ist aber vor allem die Dunkelziffer der nicht erkannten Erkrankungen. Zudem besteht noch das Problem einer einheitlichen, nachvollziehbaren Definition der Lungenerkrankung: Ab wann spricht man von einer Atemwegserkrankung? Selbst Fieber über 39,5 °C weist oft nur die Hälfte aller betroffenen Kälber auf. Und wie kann man Lungengeräusche verlässlich standardisieren? Meist ist die Diagnose überwiegend subjektiver Natur.

Neue Wege

Nun gibt es aber eine Möglichkeit Lungenschäden am lebenden Tier, mit einer bislang nicht gekannten Genauigkeit objektiv darzustellen und auch Veränderungen zu überwachen: den Lungenultraschall. Und es funktioniert mit dem gleichen Ultraschallgerät, das Tierärzte im Stall für die Trächtigkeitsuntersuchung verwenden. Ist das wirklich neu?

Nein, bereits vor mehr als zehn Jahren haben sich deutsche und Schweizer Veterinärausbildungsstätten intensiv mit den Diagnosemöglichkeiten bei Rinderlungen beschäftigt. Doch hierzulande sind diese Erkenntnisse nicht über das akademische Interesse hinausgelangt. Das könnte sich jetzt ändern. Auf Basis dieser grundlegenden Vorarbeiten aus Europa hat die amerikanische Professorin Dr. Theresa Ollivett von der Universität

Dr. Theresa Ollivett studierte in Cornell und entwickelte aus europäischen Vorarbeiten den Ultraschall. Hier wendet sie ihn gerade leicht und schnell bei einem Kalb an.



1 Hier sehen Sie mittels des Ultraschalls eine gesunde Kälberlunge.
2 Gut erkennbar ist durch das Schallen der Lunge hier die erkrankte Lunge.

Wisconsin ein einfaches und zuverlässiges Untersuchungsschema mittel Lungenultraschall entwickelt.

Anhand von nur drei Lokalisationen (zwei auf der rechten Brustkorbseite; eine auf der linken Seite) können Tierärzte in Zukunft in 3 Minuten ein Kalb mit einer bis zu 94-prozentigen Sicherheit auf Lungenschäden hin untersuchen. Lungenschäden, die man – da die Kälber von außen meist gesund aussehen – nicht in diesem Maße vermuten würde. Während man mit dem bewährten Stethoskop bei Lungenverdichtungen nur in 6 Prozent die Schäden richtig erkennt, kann mit der Ultraschalltechnik jede Verdichtung auf der Lunge dargestellt werden.

Genau erkennen

In Infektionsversuchen konnte man bereits 2 Stunden nach einer experimentellen Infektion mit Pasteurella (*Mannheimia haemolytica*) Veränderungen an der Lunge feststellen und sehen, wie diese voranschreiten. Nach 48 Stunden waren die stärksten Verdichtungen in der Lungen zu erkennen; 10 Prozent der Lungenfläche war bereits funktionslos, zu einer Zeit, als die Fieberkurve wieder nach unten zeigte.

Solche Verläufe können in der Praxis anhand von Kriterien wie Fieber (nur jeder zweite Fall von Lungenentzündung reagiert mit Fieber) oder dem Atemscore (Punkteschema für Augen- und Nasenausfluss sowie Atemfrequenz) nur sehr unzureichend dargestellt werden.

Aber nicht nur, was die Schnelligkeit angeht, auch anhand des Ultraschallbilds können Tierärzte Rückschlüsse auf die Ursache ziehen. Während Verdichtungen der Lunge durch Viren meist kleiner als 1 cm sind, sind Verdichtungen, die durch Bakterien ausgelöst werden, oft deutlich größer als 1 bis 3 cm und können ganze Lungenareale in Mitleidenschaft ziehen. Weitere Untersuchungen zeigten zudem eine sehr hohe Übereinstimmung mit Ergebnissen aus Lungenspülproben. Konnten im Ultraschallbild Lungenverdichtungen erkannt werden, zeigte sich auch in den Lungenspülproben eine dreifach erhöhte Menge an Entzündungszellen (*neutrophile Granulozyten*).

Reif für die Praxis?

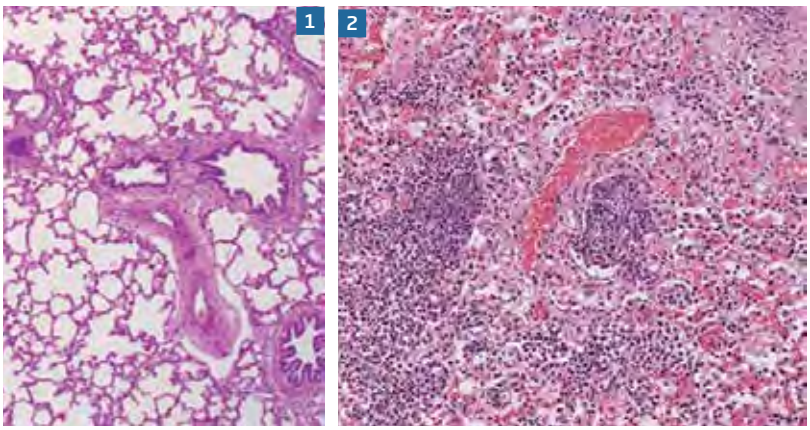
In einer Fortbildungstour mit Dr. Theresa Ollivett äußerten rund 80 Prozent der insgesamt rund 150 daran teilnehmenden Rinderpraktiker zu Beginn erhebliche Zweifel an der Umsetzbarkeit in die Praxis. Nach der Schulung kehrte sich das Bild jedoch um: Vier von fünf Tierärzten waren sich sicher, das Erlernte schnell in die Praxis umsetzen zu können und Einsatzgebiete zu erschließen, wie zum Beispiel:

- regelmäßiges Monitoring der Kälbergesundheit in puncto Haltung und Management (Klima),
- regelmäßiges Monitoring der Behandlungsmaßnahmen,
- Wirkung verschiedener Antibiotika,
- Wirkung von Impfmaßnahmen,
- Auswertung der Wirkung von metaphylaktischen Gruppenbehandlungen, Überprüfen der Compliance (Einhaltung von Behandlungsempfehlungen und -intervalle etc.),
- Ankaufsuntersuchung,
- Remontierungsentscheidungen,
- Untersuchung auf Rippenbrüche (6 Prozent aller Kälber erleiden bei der Abkalbung derartige Brüche), wenn Kälber wegen Schmerzen nicht trinken wollen.

Allerdings zweifelten über die Hälfte der Befragten daran, dass die Landwirte auch bereit wären, für diesen Service zu bezahlen.

Fazit

Die allermeisten Tierärzte arbeiten im Rinderbereich mit Ultraschall für Trächtigkeitsuntersuchungen. Sie können ab jetzt dieselben Geräte auch im Kälberbereich sinnvoll einsetzen. Ultraschall für die Diagnostik von Lungenerkrankungen ist eine gute Methode, um einen objektiven Eindruck über den Zustand der Kälberlunge zu erhalten. Die Dunkelziffer unerkannter oder nicht (aus-) therapierter Erkrankungen könnte höher liegen als die Rate klinisch auffälliger Kälber. So kann Licht ins Dunkel gebracht werden. *ah*



1 Hier erkennt man die histopathologisch normale Kälberlunge.
2 Ein deutlicher Unterschied ist bei der bakteriell erkrankten Kälberlunge erkennbar.

Dr. Peter Zieger, Tierarzt und Mitglied beim Innovationsteam Milch Hessen

Fotos: Ollivett

WORKSHOP

Jan Druyts

I am Jan Druyts, CEO and owner of Nukamel, the founder of calf milk replacers back in 1954. My family has always been and still is active in agriculture and I graduated as Agricultural engineer at Leuven University and Master in Economics at UFSIA Antwerp.
Today we are challenged by the change of our economy to a carbon neutral environment as well as an antibiotic usage free farming area. This is the real challenge that Nukamel likes to contribute too...!

Good evaluation of the quality of ingredients of milk replacer.

We all are well aware of the differences between products…even on paper they might look the same.
An easy example today is the presence of intervention skimmed milkpowder in the market, over 2 years old but sold as skimmed milkpowder. It is not rocket science to understand that a two year old product doesn't perform like fresh produced products…
Another aspect is dry matter….animal grow because they have a high intake of dry matter, usable nutrients. This means more protein is more growth, but protein and protein is also not the same, and this counts for all nutrients like fat, sugars etc…
Last but not least is processing, milk products are all produced for human use, but humans have other objectives, often not growth on the contrary. Therefore the process parameters have also a critical effect on performance.
Take home messages:
Combine information on the label to get a first impression on type of product
Quality of raw materials used can not be red from a label
Not all information can be found on a label always ask your supplier for more information!
Your calves will show you your profit of choosing a high quality milk replacer!

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Why teat design impacts calf health ?

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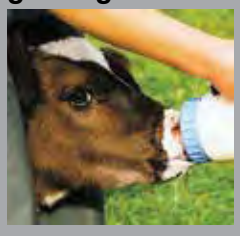
Squeeze a Milk Bar Teat and milk drips out.
The calf squeezes the teat to open it and suckles to release the milk. This uses **positive and negative pressure.**
She drinks slowly at about **3 to 4 minutes per litre** and produces a lot of saliva.

This works in harmony with nature for healthy calves. Calves have 10% higher daily weight gains!

Ignoring the Principles of Nature causes problems



Squeeze a teat with a valve and milk squirts out.
When a calf feeds she squeezes the teat and milk is forced into her mouth. **NO SUSCKLING IS REQUIRED, ONLY SQUEEZING AND GULPING.** She drinks quickly **often less than 1 minute per litre** and produces little saliva.

This is totally opposite to nature and can cause digestive problems like scours and cross suckling.

Proven Results!

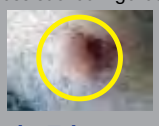
Calves fed with Milk Bar Teats ***have better lactose absorption!***
Only **3mg/gm** of lactose remained two hours after feeding with Milk Bar Teats **VS** **12mg/gm** found in calves fed from a faster teat. Less lactose (sugar) in the intestines give pathogens less to feed on to reduce nutritional scours!

Milk Bar Teat =
Healthy thick, even curding.
Only **3mg/gm** of lactose remaining.
Reducing lactose (sugar) in the intestines limits the food source required for pathogens to multiply.

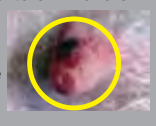
Faster feeding teat =
Insufficient curding.
12mg/gm of lactose remaining.
Higher concentrations of lactose in the intestines and faeces. This can be a major cause of scours.

Calves fed with Milk Bar Teats ***did not cross suckle!***
Research shows that calves fed from faster feeding teats cross sucked vigorously after feeding. Cross suckling is linked to mastitis and blind quarters in heifers.

Milk Bar Teat =
Calves were settled and relaxed after feeding.
Calves had healthy, undamaged teats with intact keratin plug.



Faster valve teat =
Calves cross sucked vigorously after feeding.
Cross suckling damage and loss of the keratin plug were common.



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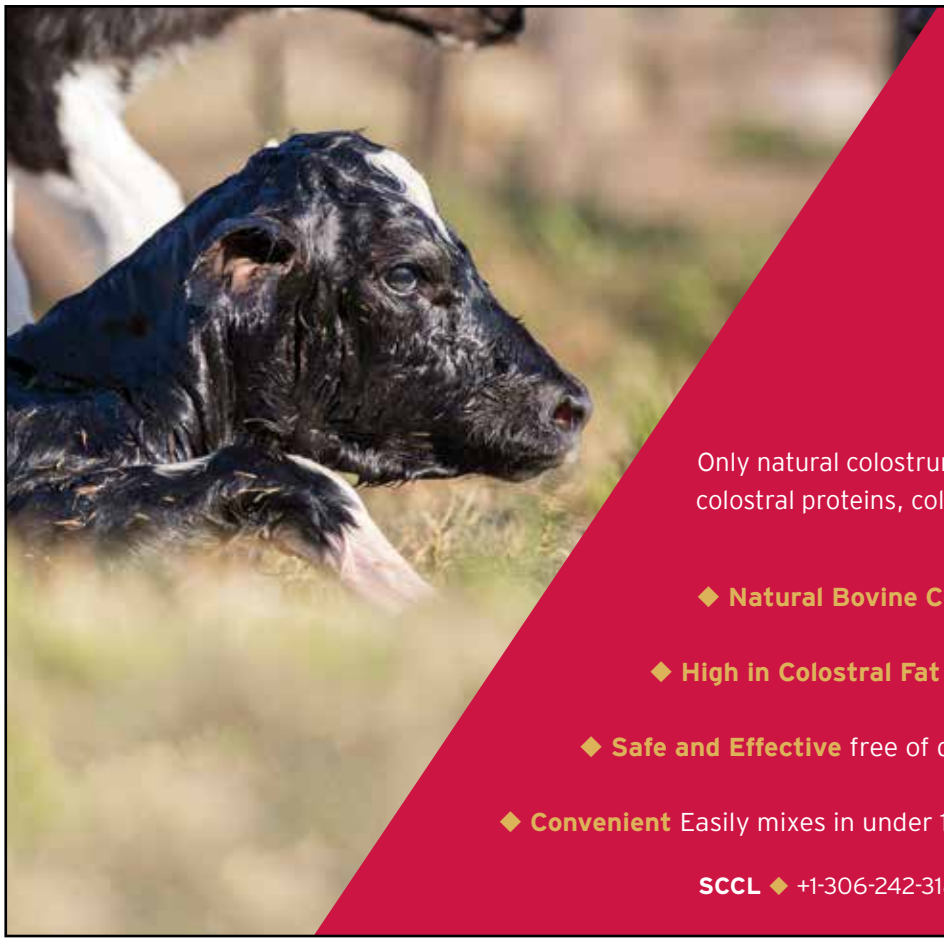

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