

Skema til afrapportering af ViD projekter
Videncenter for Dyrevelfærd
2015

1. Projekttitle: Calf welfare in organic dairy herds

2. Projektleder og projektdeltagere (titel, navn, adresse, tlf., e-mail):

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3. Populærvidenskabeligt dansk resumé (max 250 ord):

Borgerne forventer at økologisk mælkeproduktion har høj dyrevelfærd med køer, kvier og kalve på græs om sommeren. Det er derfor en stor udfordring i økologisk mælkeproduktion, at kalvedødeligheden i økologisk mælkeproduktion er relativt høj og højere end i konventionel mælkeproduktion. Formålet med denne undersøgelse var at undersøge, om der var forskel mellem konventionel og økologisk mælkeproduktion i niveau af kalvedødelighed, og om der var en forskellig virkning af sæson (sommer / vinter) på niveauet af kalvediaré og luftvejssygdomme hos kalve. Tre danske malkekvægsbesætninger, 30 konventionelle og 30 økologiske, blev besøgt én gang i løbet af sommeren og én gang i løbet af vinteren. Ved hvert besøg blev kalve (0-180 dage) klinisk undersøgt for tegn på diaré og luftvejssygdomme. Data vedrørende dødelighed blev indhentet fra en central database. Hos kalve i alderen 0-28 dage, var diaré den vigtigste sygdom, mens næseflåd og hoste oftere blev set hos kalve over 28 dage gamle. Kalvedødeligheden var afhængig af produktionssystem, med den højeste dødelighed i økologiske besætninger hos kalve indtil fravæning. Dødeligheden var højest hos de yngste kalve. Ingen af sygdomsparametrene (diaré, næseflåd, hoste og øjenflåd) var afhængige af produktionssystem alene, men udviste en vekselvirkning til sæson. Der blev fundet en vekselvirkning mellem produktionssystem og sæson for diaré og luftvejsinfektioner for de fleste aldersgrupper. Det anbefales at fokusere på forebyggende foranstaltninger for at reducere risikoen for diaré og luftvejssygdomme i økologiske kalve især om vinteren og dermed reducere kalvedødeligheden og forbedre dyrevelfærden.

4. Populærvidenskabeligt engelsk resumé (max 250 ord):

The public expects organic dairy production to have high animal welfare because cows, heifers and calves are kept on pasture during summer. It is therefore a major challenge in organic milk production that calf mortality in organic dairy production is relatively high, and higher than in conventional dairy production. The aim of the study was to investigate the effect of production system (conventional/organic) on calf mortality and the effect of production system and season (summer/winter) on calf diarrhea and respiratory disease in dairy calves aged 0-180 days. Sixty Danish dairy herds, 30 conventional and 30 organic, were visited once during summer and once

during winter. During the farm visits, calves (0-180 days of age) were clinically examined for signs of diarrhea and respiratory diseases. Data on mortality was obtained from a central database. In calves aged 0-28 days, diarrhea was the main health issue, whereas nasal discharge and coughing were more often seen in calves over 28 days of age. Calf mortality was dependent on production system, with the highest mortality in organic herds for calves up to weaning age. Mortality was highest in the youngest calves. None of the health parameters (diarrhea, nasal discharge, coughing and ocular discharge) were dependent on production system alone. An interaction between production system and season was found for diarrhea and respiratory diseases for most age groups. It is recommended to focus on preventive measures for reducing risks of diarrhea and respiratory diseases in organic calves, especially during winter, and thereby reduce calf mortality and improve animal welfare.

5. Videnskabeligt dansk resumé af projektets formål, udførelse, væsentligste resultater og konklusion (max 500 ord):

Diarré og luftvejs sygdomme hos kalve er vigtige sygdomsproblemer i mælkeproduktionen, og kan være årsag til kalvedødelighed. Tidligere undersøgelser har vist, at kalvedødelighed er højere i økologiske end i konventionelle malkekvægs-besætninger, Såvel diarre som luftvejsinfektioner hos kalve og kalvedødelighed kan være forskellige for forskellige aldersgrupper og årstider. Formålet med undersøgelsen var at undersøge virkningen af produktionssystemet (konventionel / økologisk) på kalvedødelighed og virkningen af produktionssystemet og sæson (sommer / vinter) på risikoen for diarré og luftvejs sygdomme hos kalve i alderen 0-180 dage. Kalvene blev inddelt i tre aldersgrupper: 0-28, 29-90 og 91-180 dage. 60 danske malkekvægs-besætninger, 30 konventionelle og 30 økologiske, blev besøgt én gang i løbet af sommeren og én gang i løbet af vinteren. Under hvert besøg, blev kalve klinisk undersøgt for tegn på diarré, næseflåd, hoste og øjenflåd. Data om dødelighed blev indhentet fra den Danske Kvæg Database. Hos kalve i alderen 0-28 dage var diarré den hyppigste forekommende sygdom, hvorimod næseflåd og hoste sås hyppigere hos kalve over 28 dage gamle. Kalvedødeligheden var afhængig af produktionssystem, med den højeste dødelighed i økologiske besætninger hos kalve op til fravænningsalderen (3 mdr.). Dødeligheden var højest hos de yngste kalve. Ingen af sygdomsparametrene (diarré, næseflåd, hoste og øjenflåd) var afhængige af produktionssystem alene. Virkningen af produktionssystem på hoste og øjenflåd vekselvirkede med sæsonen for kalve i alderen 29-90 og 91-180 dage. I begge aldersgrupper blev hoste mindre ofte hørt om sommeren, og øjenflåd blev sjældnere set om vinteren. Der blev fundet en vekselvirkning mellem produktionssystem og sæson for næseflåd i alle aldersgrupper, hvor økologiske besætninger havde den laveste risiko om sommeren. Resultaterne viser, at der er et behov for et øget fokus på forebyggelse af diarre og luftvejsinfektioner specielt i vintersæsonen i økologiske malkekvægsbesætninger.

6. Baggrund for projektet:

Calves (0-180 days of age) in organic milk production are offered conditions, which differs from conventional in several ways. Organic calves must be with their mother the first 24 hours after birth, they should be kept in groups from one week of age. In addition they are fed cow milk until 13 weeks of age and they should have access to roughage from the first week of life onwards and access to water. Organic calves above 4 months must be on pasture at least 150 days during summer. Disease treatment with antibiotics is only allowed if the first treatment is conducted by a veterinarian and at maximum three times a year for each animal (further treatments are possible but then the 'organic' status of the animal is lost).

Calf mortality (0-180 days of age) has been found to be 9.4 % in organic dairy herds compared with 8.2 % in conventional dairy herds (Raundal et al., 2014). A pilot study measuring clinical welfare indicators in organic and conventional calves (measured during winter), indicate relatively high level of welfare problems among young organic calves such as diarrhea and a large variation between herds (Reiten 2014).

There is a need for assessing calf welfare in organic dairy herds in different age groups and during different seasons, and to suggest actions for improving calf welfare and decreasing calf mortality.

References

Raundal, P., Nielsen J., Flagstad, P. 2014. Kalvedødelighed i Danmark

<https://www.landbrugsinfo.dk/Kvaeg/tal-om-kvaeg/Sider/pif001tabel12.aspx>

Reiten, M. 2014. Assessing animal welfare in dairy calves 0-180 days. Master thesis Aarhus University August 2014 94 pp

7. Beskrivelse af projektets formål, hypoteser samt materialer og metoder:

The aim of the project is to assess welfare of calves (0-180 days of age) in organic dairy herds with reference to calves in conventional dairy herds, and to promote calf welfare by identifying age group and season as risk factors for selected welfare problems (including calf mortality) for the benefit of organic and conventional calf welfare

During the period February 2015 to January 2016, all calves aged 0-180 days were clinically assessed in 60 Danish dairy herds. Each herd was visited twice, once in the 'winter' period (mid-November to mid-March) and once in the 'summer period' (June to the beginning of September). Each visit took place during one day, and the visits were treated as individual observations. Thirty herds were conventional and 30 herds were organic. Because it was expected that certain welfare problems would be related to certain age periods, it was recorded which of the following age groups the calves belonged to: 0-28 days, 29-90 days and 91-180 days. Altogether, 4,587 calves were assessed.

The calves were examined for clinical signs of diarrhea and respiratory disease by visual inspection. Diarrhea was assessed in two ways, either as presence of fecal smear under the tail or at the hind legs, scored as 0 (no presence) or 1 (presence) or as the presence of a hairless area under/at the tail (scored as 0: no presence or 1) as a result of prolonged diarrhea. The presence of fecal smear was called 'diarrhea 1', while the presence of fecal smear and/or hairless patch was called 'diarrhea 2'. Signs of respiratory disease consisted of coughing, nasal discharge and hampered respiration. They were all scored as 0 (not present) or 1 (present). Coughing was assessed during the whole observation period in each section of the barn, and whenever heard, the coughing individual was identified and received a score 1. Nasal discharge was assessed as a significant flow/discharge from the nostrils, often with a thick consistency and color change (white/yellow/green), while hampered respiration was assessed as abnormal breathing in the form of increased frequency and intensity. Finally, ocular discharge was assessed as presence of discharge, transparent or white/yellow from one or both of the calf's eyes, scored as 0 (no presence) or 1 (presence). The time needed for each farm visit was approximately one-two hours depending on herd size.

8. Oversigt over projektets samlede resultater (herunder hvordan resultaterne bidrager til at opfylde projektets formål):

Calf mortality was dependent on production system, with the highest mortality in organic herds for calves up to weaning age. Mortality was highest in the youngest calves in organic as well as in conventional dairy herds.

None of the examined health parameters (diarrhea, nasal discharge, coughing and ocular discharge) was dependent on production system alone. An interaction between production system and season was found for diarrhea and respiratory diseases for most age groups showing a higher disease risk for organic calves during winter.

We identified winter as a problem period for especially organic calves and suggest further investigations to reduce the problem of diarrhea and thereby improve animal welfare.

9. Diskussion af projektets resultater:

The aim of the project was to assess welfare of calves (0-180 days of age) in organic dairy herds with reference to calves in conventional dairy herds, and to promote calf welfare by identifying age group and season as risk factors for selected welfare problems (including calf mortality) for the benefit of organic and conventional calf welfare

We expected that maybe summer would be a risk for older calves in organic due to risk factors associated with grazing. However, we did not find any relation confirming this hypothesis.

We did not look at an aggregated welfare index score for comparing production systems and a possible interaction with seasons. However based on the our results on individual indicators it is questionable whether we would find a difference in an AWI between production systems

10. Konklusion og perspektivering (herunder forslag til opfølgende projekter):

Based on our study it can be concluded:

- Calf mortality was dependent on production system, with the highest mortality in organic herds for calves up to weaning age.
- Mortality was highest in the youngest calves in organic as well as in conventional dairy herds.
- An interaction between production system and season was found for diarrhea and respiratory diseases for most age groups showing a higher disease risk for organic calves during winter.

It is recommended to focus on preventive measures for reducing risks of diarrhea and respiratory diseases in organic calves especially during winter and thereby reduce calf mortality and improve animal welfare. It is important to ensure colostrum intake even though they stay with the dam, good hygiene, keep calves dry and warm.

Our investigations should be continued by identification of more specific risk factors within organic milk for calf mortality maybe as implementation study with reference to appropriate control farms

To evaluate welfare states in terms of a holistic approach more indicators need to be assessed in order to provide further information on calf welfare for the public.

11. Redegørelse for hvordan projektet og projektets resultater har været eller forventes offentliggjort:

The results from the project will be published in a scientific journal (manuscript submitted October 1):

Reiten, M., Rousing, T. Kirchner, M. K. Otten, N. D. Forkman, B. Houe, H. & Sørensen, J.T. Risk factors for mortality, diarrhea and respiratory disease in Danish dairy heifer calves. Journal of Dairy Science (submitted Oct 1 2016)