Epidemiological reaction norms for mastitis

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Heritabilities for mastitis, and diseases in general, are low. One reason is that generally no distinction can be made in field data between healthy animals that are resistant and healthy animals that have not been exposed to pathogens. To take exposure into account we quantified the prevalence of mastitis in Swedish dairy herds. Herd prevalence of clinical mastitis (CM) was defined as the percentage of cows in a herd that received a recorded veterinary treatment for mastitis in a three month period. Herd prevalence of subclinical mastitis (SCM) was defined as the percentage of cows in the herd with a somatic cell count above 150,000 at a single test day. In a reaction norm analysis individual (S)CM for Holstein heifers was defined as the occurrence of at least one case of (S)CM in a lactation. In a reaction norm analysis the heritability of (S)CM was estimated as a function of herd prevalence for (S)CM. The best fitting model was for CM as a linear function of average herd prevalence of CM during the whole lactation, and for SCM as a 2nd order polynomial of average herd prevalence of SCM during the whole lactation. Range of estimated heritabilities was with 0.02-0.03 for CM and with 0.07-0.11 for SCM similar to estimates in literature that did not take herd prevalence into account. Explanations may be that the relation between exposure risk and herd prevalence, or between actual infection and (S)CM as defined in this study, are not as expected.