

Analysis of national serological surveys for the documentation of freedom from porcine reproductive and respiratory syndrome in Switzerland

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Schlüsselwörter

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Problemstellung und Zielsetzung

In Winter 2000/2001 blood from 41'923 breeding sows located on 2'543 farms was sampled and tested for Aujeszky's Disease, PRRS, CSF and TGE.

The Farms were categorized according to herd sensitivity and the total sensitivity of the survey was assessed in a two step approach. Besides this rather conservative approach, modern methods to analyze the survey results exist. The extensive data material would be perfectly suited to apply Bayesian methods.

Material und Methoden

Target population in surveys conducted in Switzerland in 2001 and 2004 consisted of females from breeding herds. In 2001 in 41,124 sows from 2,540 herds out of 6,406 were screened. In 2004, 7,498 animals from 1,074 herds out of 5,320 were sampled. All samples were tested for PRRS using an ELISA. FAT was applied on positive samples obtained in the ELISA.

In 2001, 41,113 were negative and 11 could not be conclusively confirmed by the FAT. In 2004, 7,496 were negative and six were not confirmed by the FAT. Data from 2001 were modeled to verify if the sampling scheme used could detect with 99% confidence level at least one infected herd. A stochastic model simulation was applied to both surveys with a post-survey probability of freedom from PRRS calculated by a Bayesian approach. The pre-survey probability for 2001 was modeled by a pert distribution (min 80%, ml 90%, max 95%). The post-survey probability derived after the survey conducted in 2001 was in turn used as the prior probability for the survey in 2004.

Ergebnisse und Bedeutung

According to the SSE calculated for the main survey (2001), the overall probability of observing at least one infected herd based on survey sampling was 91.2% with a predefined HP of 0.1%. It was estimated by the simulation model that truly infected animals and herds could not be detected by the 2001 survey at the 99% confidence level since, at a 1% percentile, no true positive animals were predicted to have been included in the survey.

The probability of freedom from PRRS increased in 2001 from a prior median value of 89.3% (83.5% - 93.8%, 2.5th and 97.5th perc.) to a posterior value of 99.2% (97.7% - 99.7%). After the 2004 survey, the probability of freedom from PRRS reached a value of 99.7% (99.8% - 99.9%). It can be concluded that the pig industry in Switzerland is free of PRRS virus.

Publikationen, Poster und Präsentationen

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