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INVERNESS

ESTELLE ÅGREN, SUSANNA STERNBERG LEWERIN, JENNY FRÖSSLING

Testing for freedom from salmonella in Swedish cattle herds

Evaluation of sampling strategies

Based on Swedish legislation, all herds where salmonella of any serotype is detected are put under restrictions and measures aiming at eradication are required. Costs for sampling and control has increased in recent years and the aim of this study was to quantify and compare the efficiency of different sampling strategies, on group level and herd level.

A scenario-tree modelling approach was used to estimate sensitivity and specificity on group and herd level, and to account for the hierarchy of animals within groups, and groups within herds, and different relative risk of salmonella in different age groups (i.e. calves, young stock, and cows).

Low prevalence regions

Herds in mainland Sweden.

High prevalence region

Herds in Öland.

Unknown status

E.g. herds infected in the past, or contact herds.

Probability of infection

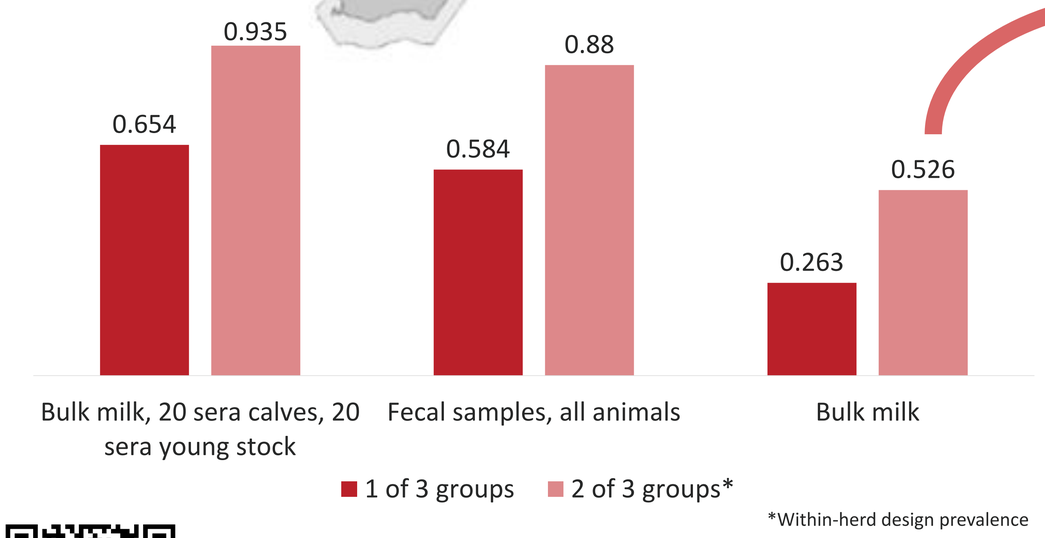
		Low	High	Unknown
Prior		0.010	0.200	0.500
Posterior*	Serology +	0.033	0.454	0.769
	Fecal culture +	1.000	1.000	1.000
	Serology -	0.004	0.086	0.274
	Fecal culture -	0.008	0.172	0.454

*Based on sampling of 10 animals in a group of 50

Conclusions

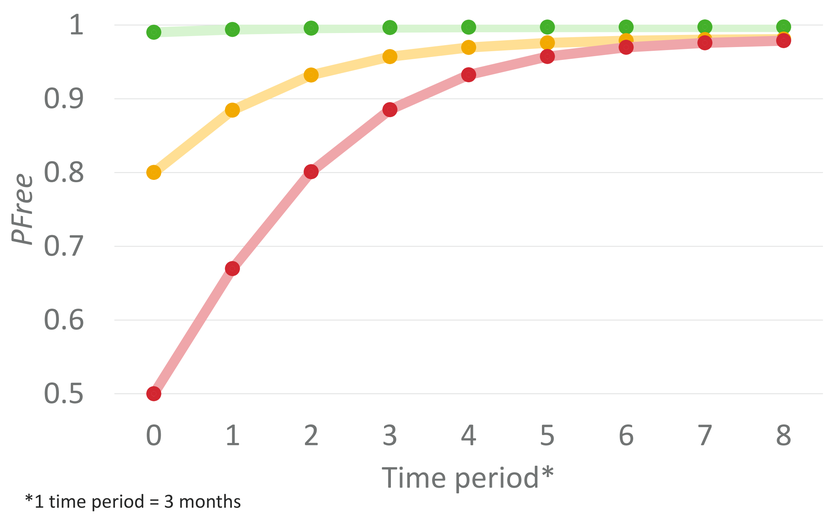
- There is little added value in sampling individual herds in the low prevalence regions.
- Repeated sampling is required to demonstrate freedom from salmonella in herds in high prevalence regions or herds with unknown status.
- Sampling strategies should be adapted to the purpose of testing and herd risk category.

Herd sensitivity



*Within-herd design prevalence

Probability of freedom, herd



*1 time period = 3 months

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