The impact of the sow for the spread of Salmonella within the pork production chain

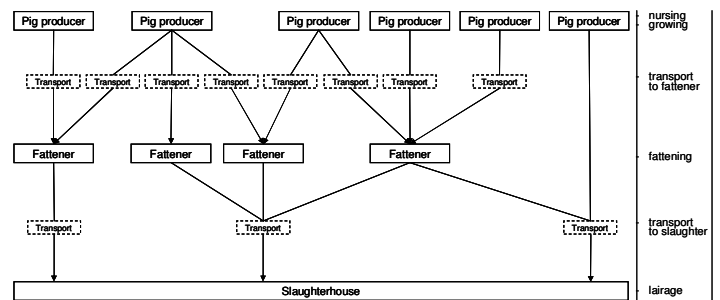S. Hotes, I. Traulsen & J. Krieter

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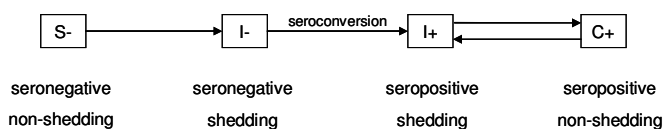
How relevant is the percentage of Salmonella shedding sows for the prevalence of slaughter pigs?

➢ **A pig-based model for the spread of inapparent Salmonella infection within the pork supply chain from pig producing stage to slaughterhouse (a).**

➢ **Four mutually exclusive pig health states (b).**

➢ **Pig producing farms are defined by one of three prevalence levels. Varying percentages of Salmonella shedding sows for every level (-/+ 25%) (c).**

(a) Possible network structure

(b) Pig health states

S-	I-	I+	C+
seronegative	seronegative	seropositive	seropositive
non-shedding	shedding	shedding	non-shedding

(c) Percentage of shedding sows

sow-herd prevalence	minimum values		default values		maximum values	
	non-shedder sows	shedder sows	non-shedder sows	shedder sows	non-shedder sows	shedder sows
low	99.25%	0.75%	99.00%	1.00%	98.75%	1.25%
middle	96.25%	3.75%	95.00%	5.00%	93.75%	6.25%
high	92.50%	7.50%	90.00%	10.00%	87.50%	12.50%

Least Square Means depending on the percentage of shedding sows
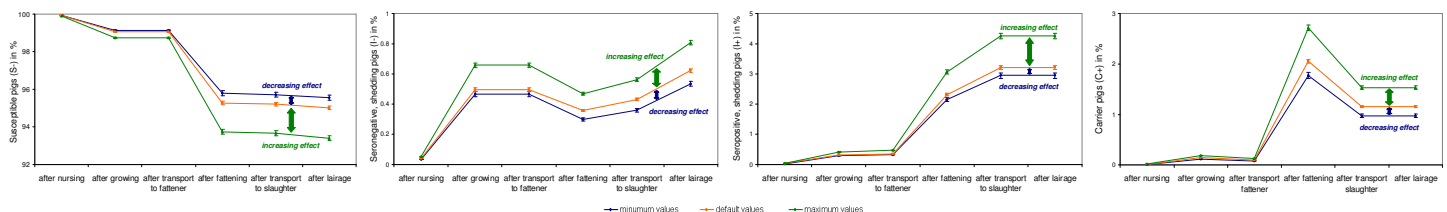
Conclusion

➢ Non-linear relation: Based on the default values, the prevalence increasing effect exceeds the decreasing effect.

➢ Less than 0.1% infected piglets after nursing causes slaughter pig prevalences up to 7%.

➢ Major part of effective contacts happens during fattening although nursing sows are the only initial infection source.

➢ At transport to slaughter much more carrier pigs restart shedding due to stress than at transport to fattener.

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