The impact of infection with Schmallenberg virus on weaning rate in Irish sheep flocks

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Introduction

Schmallenberg virus (SBV) disease emerged in Europe in 2011 while the first confirmed case of SBV infection in Ireland was diagnosed in a dairy calf in October 2012. SBV was subsequently confirmed by RT-PCR in 49 cattle herds and 39 sheep flocks in other studies. These studies provide a good representation of the spatial distribution of SBV in Ireland however, they did not quantify the impact of SBV on productivity.

The objectives of this study were to assess the impact of SBV on weaning rate in Irish sheep flocks, and to evaluate weaning rate in sheep flocks as an indicator to be used in emerging disease surveillance systems.

Materials and methods

- A questionnaire was designed to collect flock production data from sheep farmers
- This questionnaire was distributed among 70 Teagasc advisory staff, who distributed it among their farm discussion groups. It was also distributed to flockowners who had SBV confirmed in their flocks and attendees at the 2013 IGA sheep conference
- 267 flock owners responded to the survey
- Data were entered into Excel 2007 (Microsoft, USA) and transferred to Stata SE 12 (Statacorp, USA) for analysis
- The 2013 weaning rate was the outcome variable.
- Poisson and negative binomial regression were carried out

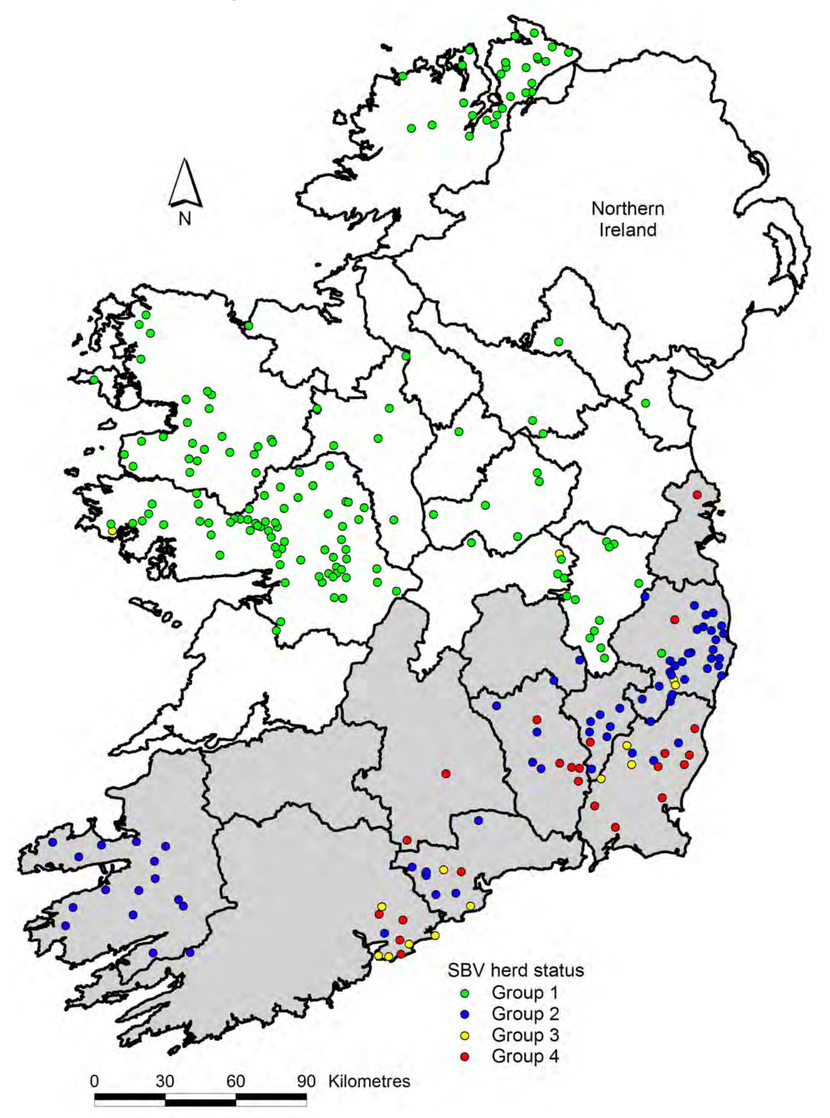
Negative binomial regression model for weaning rate 2013 among 267 sheep flocks

Independent variables	IRR*	Std. Err.	P>|z|	95% Conf. Interval	
				lower	upper
Constant	0.720	0.042	0.000	0.635	0.816
SBV Status (Referent: SBV not suspected by farmer in a county where SBV was not confirmed)					
SBV infection not suspected by farmer, in a county where SBV was confirmed	1.004	0.018	0.811	0.967	1.041
SBV infection suspected by farmer, but not laboratory confirmed	0.985	0.018	0.681	0.916	1.059
SBV infection was confirmed by RT-qPCR	0.895	0.028	0.000	0.841	0.951
Sheep type (referent: lowland)					
Mountain	0.916	0.033	0.015	0.853	0.983
Lowland and mountain	0.947	0.019	0.009	0.909	0.986
Pedigree and mix of the above	1.005	0.027	0.837	0.953	1.060
2013 ewe barren rate	0.393	0.066	0.000	0.283	0.545
2012 weaning rate	1.645	0.065	0.000	1.522	1.778

Results

The study flocks were grouped according to SBV status as follows:

- Group 4 (Red), flocks in which SBV infection was confirmed, by RT-PCR (n = 23)
- Group 3 (Yellow) , flocks in which SBV infection was suspected by the farmer, but with no laboratory confirmation (n = 14)
- Group 2 (Blue) , flocks in which SBV was not suspected by the farmer, in a county where SBV was confirmed (n = 59)
- Group 1 (Green), flocks in which SBV was not suspected by the farmer, in a county where SBV was not confirmed (n = 171)



Discussion / Conclusions

- Weaning rates in flocks with a confirmed diagnosis of SBV were approximately 90% that of those of negative flocks in known negative areas.
    - Justifiable concern for sheep farmers
    - Only observed in flocks with confirmed diagnosis

Several other factors were also found to influence weaning rate.

- Lowland breeds better than mountain breeds
- 2013 barren ewe rate
- 2012 weaning rate

- The value of production data in informing management decisions at farm level is well recognised.
- This present study also shows the value of access to production databases as an indicator of an emerging disease problem.
- Such information can help risk managers (veterinary practitioners, and policy makers) to quantify the costs and likely benefits of any intervention.
- For sheep, the optimum system would be a composite of real time measures including lamb mortality rates, ewe barren rates, weaning rates and ewe cull rates

References

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