

A NOVEL DECISION SUPPORT SYSTEM: INTEGRATION OF DISEASE MODELS WITH A FARM ECONOMIC MODEL

Gunn GJ, Stott AW, Humphry RW, Jones G, Lloyd J & Oglethorpe D

Contact Details & Presenting Author:

George Gunn, Epidemiology Unit, SAC Veterinary Science Division, Drummondhill, Stratherrick Road, Inverness, Scotland, UK IV2 4JZ

Tel: (+44) 1463 243 030

Fax: (+44) 1463 711 103

E-mail: g.gunn@ed.sac.ac.uk

Scottish livestock farmers and their veterinary advisors are under increasing pressure to rationalise their approach to disease control. There has been a steady downward trend in farm incomes, especially in the traditional marginal beef and sheep farms, with a very real fear that preventive medicine will be abandoned altogether in such areas (Young, R, 1997). Animal welfare must be safeguarded but there is a need to allocate scarce resources very carefully across all aspects of the farm business taking into account relative risk as well as the returns associated with each decision. Decision Support Systems (DSS) already exist to assist the decision makers in most other areas of farming such as cereal production but, so far, there are few aids in the veterinary sector.

The authors will present a prototype DSS which is being developed to rationalise some of the massive range of options that preventive veterinary medicine presents to the informed producer. This DSS incorporates a mathematical programming model for a Scottish extensive livestock farming system (Bowley & Oglethorpe 1999) which includes alternative veterinary treatment activities for a specific disease. The aim is to obtain the best resource allocation between competing treatment options, both within and between species that minimises risk to the farm business for a given farm income target. This DSS pulls together published findings but where data are missing, in particular for disease effects, costs and prevalence, the team is generating the missing information using disease modelling methodologies developed in earlier studies. This talk will be illustrated using bovine viral diarrhoea (Gunn,1998) as an example within the farm economic model.

References:

Bowley, F. and Oglethorpe, D. R. (1999) Predicting the Farmer Response to a Post-Agenda 2000 Common Agricultural Policy, Paper presented to the Agricultural Economics Society Conference, Belfast, March, 1999.

Gunn G.J., Stott A. W. & Scanlan S.A. (1998) Estimating the losses associated with bovine viral diarrhoea (BVD) in Scottish cow-calf herds. Proceedings, XXth World Buiatrics Conference, Sydney, Australia.

Young, R (1997) The Scotsman Newspaper, 27th December

Acknowledgements

We gratefully acknowledge the technical support of Siobhan Scanlan at SAC Inverness VSD. This work is supported financially by the Scottish Executive Rural Affairs Department