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Technology Transfer Symposium

Design of Strategic Anthelmintic Control Programs in Cattle Using a Mathematical Model: *Paraban*

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The design of cost-effective practical parasite control programs is fundamental to achieving optimum productivity from grazing cattle. Strategic treatment regimens such as the 3, 8 and 13 program utilizing ivermectin or the 3 and 6 recommendation for conventional anthelminitics have been developed from systematic field trials. These recommendations are relatively inflexible as they do not allow for altered animal management schemes. The objective for development of the PARABAN program was to facilitate design of efficient parasite control measures that would account for distinct husbandry practices and allow recognition of the potential consequences of missed or altered timing of doses. Data on the population biology of *Cooperia, Trichostrongylus, Haemonchus* and *Ostertagia* permit the development of a model for the processes that regulate and control parasite abundance. Input of local climatic data, as well as locally identified patterns of inhibition, allow tailoring of the model to project epidemiology on a regional basis. Incorporation of data on anthelmintic efficacy allows comparison of different treatment strategies, according to management objectives identified by the user. Validation studies completed in Europe and South America and comparison of model projections with published field data from the United States and New Zealand suggest that the model has a sound base for use throughout the world as a guide in development of parasite control strategies. Informed use of such a model will provide an educational basis to facilitate responsible and cost effective use of anthelminitics.