

REFERENCES

- ABBOT, E.M., PARKINS, J.J. & HOLMES, P.H. 1985. Influence of dietary protein on parasite establishment and pathogenesis in Dorset and Scottish Blackface lambs given a single moderate infection of *Haemonchus contortus*. *Research in Veterinary Science*, 38:6–13.
- ACHI, Y.L., ZINSSTAG, J., YAO, N., DORCHIES, P. & JACQUIET, P. 2003. Host specificity of *Haemonchus* spp. for domestic ruminants in the savanna in northern Ivory Coast. *Veterinary Parasitology*, 116:151–158.
- ACOCKS, J.P.H. 1988. *Veld types of South Africa*. Memoirs of the botanical survey of South Africa, edited by O.A. Leistner. Pretoria: Botanical Research Institute.
- ALBERS, G.A.A., GRAY, G.D., PIPER, L.R., BARKER, J.S.F., LE JAMBRE, L.F. & BARGER, I.A. 1987. The genetics of resistance and resilience to *Haemonchus contortus* infection in young merino sheep. *International Journal for Parasitology*, 17:1355–1363.
- ALBERS, G.A.A., GRAY, G.D., LE JAMBRE, L.F., BARGER, I.A. & BARKER, J.S.F. 1990. The effect of *Haemonchus contortus* infection on haematological parameters in young merino sheep and its significance for productivity. *Animal Production*, 50:99–109.
- AL-ZAHRANI, M. & HUSSEIN, T. 1998. An algorithm for designing a precipitation network in the south-western region of Saudi Arabia. *Journal of Hydrology*, 205:205–216.
- ANDERSON, N., DASH, K.M., DONALD, A.D., SOUTHCOTT, W.H. & WALLER, P.J. 1978. Epidemiology and control of nematode infections, in *The Epidemiology and Control of Gastrointestinal Parasites of Sheep in Australia*, edited by A.D. Donald, W.H. Southcott & J.K. Dineen. CSIRO: Australia, pp 24–37.
- ANDERSON, R.M. & MAY, R.M. 1982. Population dynamics of human helminth infections: control by chemotherapy. *Nature*, 297:557–563.
- ANDREWS, S. 1942. Stomach worm (*Haemonchus contortus*) infection in lambs and its relation to gastric haemorrhage and general pathology. *Journal of Agricultural Research*, 65:1–18.

- ANONYMOUS, 2005. Africa's cellphone revolution. Finance24, 17 April 2005 (<http://www.finance24.com>)
- ANZIANI, O.S., SUAREZ, V., GUGLIELMONE, A.A., WARNKE, O., GRANDE, H. & COLES, G.C. 2004. Resistance to benzimidazole and macrocyclic lactone anthelmintics in cattle nematodes in Argentina. *Veterinary Parasitology*, 122:303–306.
- ASHA, M.K., PRASHANTH, D., MURALI, B., PADMAJA, R. & AMIT, A. 2001. Anthelmintic activity of essential oil of *Ocimum sanctum* and eugenol. *Fitoterapia*, 72:669–670.
- ATHANASIADOU, S., KYRIAZAKIS, I., JACKSON, F. & COOP, R.L. 2000. Consequences of long-term feeding with condensed tannins on sheep parasitized with *Trichostrongylus colubriformis*. *International Journal for Parasitology*, 30:1025–1033.
- BAKER, N.F., COOK, E.G., DOUGLAS, J.R. & CORNELIUS, C.E. 1959. The pathogenesis of trichostrongylid parasites. III. Some physiological observations in lambs suffering from acute parasitic gastroenteritis. *Journal of Parasitology*, 45:543–641.
- BAKER, R.L., MWAMACHI, D.M., AUDHO, J.O., ADUDA, E.O. & THORPE, W. 1999. Genetic resistance to gastro-intestinal nematode parasites in Red Maasai, Dorper and Red Maasai x Dorper ewes in the sub-humid tropics. *Animal Science*, 69:335–344.
- BANKS, D.J.D., SINGH, R., BARGER, I.A., PRATAP, B. & LE JAMBRE, L.F. 1990. Development and survival of *Haemonchus contortus* and *Trichostrongylus colubriformis* in a tropical environment. *International Journal for Parasitology*, 20:155–160.
- BARGER, I.A. 1985. The statistical distribution of trichostrongylid nematodes in grazing lambs. *International Journal for Parasitology*, 15:645–649.
- BARGER, I.A. & DASH, K.M. 1987. Repeatability of ovine faecal egg counts and blood packed cell volumes in *Haemonchus contortus* infections. *International Journal for Parasitology*, 17:977–980.

- BARGER, I.A., SIALE, K., BANKS, D.J.D. & LE JAMBRE, L.F. 1994. Rotational grazing for control of gastrointestinal nematodes of goats in a wet tropical environment. *Veterinary Parasitology*, 53:109–116.
- BARGER, I.A. 1996. Prospects for integration of novel parasite control options into grazing systems. *International Journal for Parasitology*, 26:1001–1007.
- BARNES, E.H. & DOBSON, R.J. 1993. Persistence of acquired immunity to *Trichostrongylus colubriformis* in sheep after termination of infection. *International Journal for Parasitology*, 23:1019–1026.
- BARNES, E.H., DOBSON, R.J. & BARGER, I.A. 1995. Worm control and anthelmintic resistance: adventures with a model. *Parasitology Today*, 11:56–63.
- BATH, G.F., MALAN, F.S. & VAN WYK, J.A. 1996. The FAMACHA[®] ovine anemia guide to assist with the control of haemonchosis. *Proceedings of the 7th Annual Congress of the Livestock Health and Production Group of the South African Veterinary Association, Port Elizabeth 1996: 5–7.*
- BATH, G.F., HANSEN, J.W., KRECEK, R.C., VAN WYK, J.A. & VATTA, A.F. 2001. Sustainable approaches for managing haemonchosis in sheep and goats. Food and Agriculture Organization Animal Production and Health Paper: Technical Co-operation Project No. TCP/SAF/8821(A).
- BECK, R., GAŠPAR, A., MIHALJEVIĆ, Ž., MARINCULIĆ, A., STOJČEVIĆ, D. & BRSTILO, M. 2005. Evaluation of ELISA for detection of *Trichinella* antibodies in muscle juice samples of naturally infected pigs. *Veterinary Parasitology*, 132:91–95.
- BEGG, C. 1987. Biases in the assessment of diagnostic tests. *Statistics in Medicine*, 6:411–423.
- BESIER, R.B. & DUNSMORE, J.D. 1993a. The ecology of *Haemonchus contortus* in a winter rainfall climate in Australia: the development of eggs to infective larvae. *Veterinary Parasitology*, 45:275–292.
- BESIER, R.B. & DUNSMORE, J.D. 1993b. The ecology of *Haemonchus contortus* in a winter rainfall climate in Australia: the survival of infective larvae on pasture. *Veterinary Parasitology*, 45:293–306.

- BESIER, B. 2007. New anthelmintics for livestock: the time is right. *Trends in Parasitology*, 23:21–24.
- BIRD, J., SHULAW, W.P., POPE, W.F. & BREMER, C.A. 2001. Control of anthelmintic resistant endoparasites in a commercial sheep flock through parasite community replacement. *Veterinary Parasitology*, 97:221–227.
- BISHOP, S.C. & STEAR, M.J. 2003. Modeling of host genetics and resistance to infectious diseases: understanding and controlling nematode infections. *Veterinary Parasitology*, 115:147–166.
- CARACOSTANTOGOLO, J., CASTAÑO, R., CUTULLÉ, C.H., CETRÁ, B., LAMBERTI, R., OLAECHEA, F., RUIZ, M., SCHAPIRO, J., MARTINEZ, M., BALBIANI, G. & CASTRO, M. 2005. Evaluación de la resistencia a los antihelmínticos en ruminantes en Argentina. En resistencia a los antiparasitarios internos en la Argentina, Estudio FAO producción y sanidad animal, Organización de las Naciones Unidas para la Agricultura y la Alimentación, Roma 2005.
- CARMICHAEL, I., VISSER, R., SCHNEIDER, D. & SOLL, M. 1987. *Haemonchus contortus* resistance to ivermectin. *Journal of the South African Veterinary Association*, 58:93.
- CHAPPEL, L.H. 1994. Physiology and nutrition, in *Modern parasitology: A textbook of parasitology*, 2nd edition, edited by F.E.G. Cox. Oxford: Blackwell Scientific Publications, pp167–169.
- CHARTIER, C., PORS, I., HUBERT, J., ROCHETEAU, D., BENOIT, C. & BERNARD, N. 1998. Prevalence of anthelmintic resistant nematodes in sheep and goats in western France. *Small Ruminant Research*, 29:33–41.
- CLUNIES-ROSS, I. 1932. Observations on the resistance of sheep to infestations by the stomach worm, *Haemonchus contortus*. *Journal of the Council for Scientific and Industrial Research*, 3:73–80.
- COOP, R.L. & KYRIAZAKIS, I. 1999. Nutrition-parasite interaction. *Veterinary Parasitology*, 84:253–261.

- CORONADO, A., ESCALONA, J., HENRIQUEZ, H., MUJICA, F. & SUAREZ, C. 2003. Ivermectin resistance in naturally *Cooperia* sp. infected heifers in Lara state, Venezuela. *Proceedings of the 5th international Seminar in Animal Parasitology, October 1-3, Merida, Yucatan, Mexico 2003*: 67–71.
- COSTANZA, R., DUPLISEA, D. & KRAUTSKY, U. 1998. Ecological Modelling on modelling ecological and economic systems with STELLA. *Ecological Modelling*, 110:1–4.
- DARGIE, J.D. & ALLONBY, E.W. 1975. Pathophysiology of single and challenge infections of *Haemonchus contortus* in merino sheep: studies on red cell kinetics and the “self-cure” phenomenon. *International Journal for Parasitology*, 5:147–157.
- DASH, K.M. 1986. Control of helminthosis in lambs by strategic treatment with closantel and broad-spectrum anthelmintics. *Australian Veterinary Journal*, 63:4–8.
- DASH, K.M., NEWMAN, R.L. & HALL, E. 1985. Recommendations to minimise selection for anthelmintic resistance in nematode control programmes, in *Resistance in nematodes to anthelmintic drugs*, edited by N. Anderson & P.J. Waller. CSIRO Division of Animal Health, Australian Wool Corporation, pp161–169.
- DOBSON, R.J. 1999. Modelling and forecasting. *International Journal for Parasitology*, 29:93–94.
- DOBSON, R.J. & BARNES, E.H. 1995. Interaction between *Ostertagia circumcincta* and *Haemonchus contortus* infection in young lambs. *International Journal for Parasitology*, 25:495–501.
- DOBSON, R.J., BESIER, R.B., BARNES, E.H., LOVE, S.J.C., BELL, K. & LE JAMBRE, L.F. 2001. Principles for the use of macrocyclic lactones to minimise selection for resistance. *Australian Veterinary Journal*, 79:756–761.
- DOBSON, R.J., WALLER, P.J. & DONALD, A.D. 1990a. Population dynamics of *Trichostrongylus colubriformis* in sheep: the effect of infection rate on the establishment of infective larvae and parasite fecundity. *International Journal for Parasitology*, 20:347–352.
- DOBSON, R.J., WALLER, P.J. & DONALD, A.D. 1990b. Population dynamics of *Trichostrongylus colubriformis* in sheep: the effect of host age on the establishment of infective larvae. *International Journal for Parasitology*, 20:353–357.

- DOBSON, R.J., WALLER, P.J. & DONALD, A.D. 1990c. Population dynamics of *Trichostrongylus colubriformis* in sheep: the effect of infection rate on loss of adult parasites. *International Journal for Parasitology*, 20:359–363.
- DONALD, A.D., SOUTHCOOT, W.H. & DINEEN, J.K. 1978. *The epidemiology and control of gastrointestinal parasites of sheep in Australia*. Australia: CSIRO.
- DUNN, A.M. 1969. *Veterinary helminthology*. London: William Heinemann Medical Books Ltd.
- EADY, S.J., WOOLASTON, R.R., LEWER, R.P., ROADSMAN, H.W., SWAN, A.A. & PONZONI, R.W. 1998. Resistance to nematode parasites in Merino sheep: correlation with production traits. *Australian Journal of Agricultural Research*, 49:1201–1211.
- ECHEVARRIA, F.A.M., GETTINBY, G. & HAZELWOOD, S. 1993. Model predictions for anthelmintic resistance amongst *Haemonchus contortus* populations in southern Brazil. *Veterinary Parasitology*, 47:315–325.
- EMERY, D.L. 1996. Vaccination against worm parasites of animals. *Veterinary Parasitology*, 64:31–35.
- FAEDO, M. 2001. Growth, trapping and genetic diversity of *Duddingtonia flagrans* - a biological control agent of free-living larval stages of ruminant parasitic nematodes. Ph.D. thesis, Royal Veterinary and Agricultural University.
- FAEDO, M., LARSEN, M. & THAMSBORG, S. 2000. Effect of different times of administration of the nematophagous fungus *Duddingtonia flagrans* on the transition of ovine parasitic nematodes on pasture - a pilot study. *Veterinary Parasitology*, 94:55–65.
- FONTENOT, M.E., MILLER, J.E., PEÑA, M.T., LARSEN, M. & GILLESPIE, A. 2003. Efficiency of feeding *Duddingtonia flagrans* chlamydospores to grazing ewes on reducing availability of parasitic nematode larvae on pasture. *Veterinary Parasitology*, 118:203–213.
- GAULY, M., KRAUS, M., VERVELDE, L., VAN LEEUWEN, M.A.W. & ERHARDT, G. 2002. Estimating genetic differences in natural resistance in Rhön and Merinoland sheep following experimental *Haemonchus contortus* infection. *Veterinary Parasitology*, 106:55–67.

- GEARY, T.G. & THOMPSON, D.T. 2003. Development of antiparasitic drugs in the 21st century. *Veterinary Parasitology*, 115:167–184.
- GETTINBY, G. 1989. Computational veterinary parasitology with an application to chemical resistance. *Veterinary Parasitology*, 32:57–72.
- GIBSON, T.E. 1975. *Veterinary anthelmintic medication*, 3rd ed. Slough: Commonwealth Agricultural Bureaux.
- GITHIGIA, S.M., THAMSBORG, S.M., LARSEN, M., KYVSGAARD, N.C. & NANSEN, P. 1997. The preventive effect of the fungus *Duddingtonia flagrans* on trichostrongyle infections of lambs in pasture. *International Journal for Parasitology*, 27:929–931.
- GORDON, H. McL. 1981. Epidemiology of helminthosis of sheep: diagnosis. *Refresher course for veterinarians. Proceedings no. 58. Refresher course for sheep*. University of Sydney (The Post-Graduate Committee in Veterinary Science), pp 607–615.
- GREINER, M. & GARDNER, I.A. 2000. Epidemiologic issues in the validation of veterinary diagnostic tests. *Preventive Veterinary Medicine*, 45:3–22.
- GREINER, M., PFEIFFER, D. & SMITH, R.D. 2000. Principles and practical application of the receiver-operating characteristic analysis for diagnostic tests. *Preventive Veterinary Medicine*, 45:23–41.
- GREINER, M., SOHR, D. & GÖBEL, P. 1995. A modified ROC analysis for the selection of cut-off values and the definition of intermediate results of serodiagnostic tests. *Journal of Immunological Methods*, 185:123–132.
- HALL, R. & MALIA, R.G. 1984. *Medical laboratory haematology*. London: Butterworth and Co.
- HAMMOND, J.A., FIELDING, D. & BISHOP, S.C. 1997. Prospects for plant anthelmintics in tropical veterinary medicine. *Veterinary Research Communications*, 21:213–228.
- HANLEY, J.A. & McNIEL, B.J. 1982. The meaning and use of the area under a Receiver Operating Characteristic (ROC) curve. *Radiology*, 143:29–36.

- HANSEN, J. & PERRY, B. 1994. *The epidemiology, diagnosis, and control of helminth parasites of ruminants*. Nairobi: International Laboratory for Research on Animal Diseases.
- HASTINGS, I. 2001. Modelling parasite resistance: lessons for management and control strategies. *Tropical Medicine and International Health*, 6:883–890.
- HERBERT, J. & ISHAM, V. 2000. Stochastic host-parasite interaction models. *Journal of Mathematical Biology*, 40:343–371.
- HORAK, I.G. & LOUW, J.P. 1977. Parasites of domestic and wild animals in South Africa. IV. Helminths in sheep on irrigated pasture on the Transvaal highveld. *Onderstepoort Journal of Veterinary Research*, 44:261–270.
- HORAK, I.G. 1980. The incidence of helminths in pigs, sheep, cattle, impala and blesbok in the Transvaal. Ph.D. thesis, University of Natal.
- HORAK, I.G. 1981a. Host specificity and the distribution of the helminth parasites of sheep, cattle, impala and blesbok according to climate. *Journal of the South African Veterinary Association*, 52:201–206.
- HORAK, I.G. 1981b. The similarity between arrested development in parasitic nematodes and diapause in insects. *Journal of the South African Veterinary Association*, 52:299–303.
- HORAK, I.G., KNIGHT, M.M. & WILLIAMS, E.J. 1991. Parasites of domestic and wild animals in South Africa. XXVIII. Helminth and arthropod parasites of Angora goats and kids in Valley Bushveld. *Onderstepoort Journal of Veterinary Research*, 58:253–260.
- HORAK, I.G., MacIVOR, K.M. De F. & GREEFF, C.J. 2001. Parasites of domestic and wild animals in South Africa. XXXIX. Helminth and arthropod parasites of Angora goats in the southern Karoo. *Onderstepoort Journal of Veterinary Research*, 68:27–35.
- HORAK, I.G. 2003. Parasites of domestic and wild animals in South Africa. XLII. Helminths of sheep on four farms in the Eastern Cape Province. *Onderstepoort Journal of Veterinary Research*, 70:175–186.

- HORAK, I.G., EVANS, U. & PURNELL, R.E. 2004. Parasites of domestic and wild animals in South Africa. XLV. Helminths of dairy calves on dry-land kikuyu grass pastures in the Eastern Cape Province. *Onderstepoort Journal of Veterinary Research*, 71:291–306.
- HOSKING, B.C, WATSON, T.G. & LEATHWICK, D.M. 1996. Multigeneric resistance to oxfendazole by nematodes in cattle. *Veterinary Record*, 138:67–68.
- HOSTE, H., CHARTIER, C., LEFRILEUX, Y., GODEAU, C., PORS, I., BERGAUD, J.P. & DORCHIES, P. 2002. Targeted application of anthelmintics to control trichostrongylosis in dairy goats: results from a 2-year survey in farms. *Veterinary Parasitology*, 110:101–108.
- HOSTE, H., JACKSON, F., ATHANASIADOU, S., THAMSBORG, S.M. & HOSKIN, S.O. 2006. The effects of tannin-rich plants on parasitic nematodes in ruminants. *Trends in Parasitology*, 22:253–260.
- IKEME, M.M., ISKANDER, F. & CHONG, L.C. 1987. Seasonal changes in the prevalence of *Haemonchus* and *Trichostrongylus* hypobiotic larvae in tracer goats in Malaysia. *Tropical Animal Health and Production*, 19:184–190.
- JACKSON, F. & MILLER, J. 2006. Alternative approaches to control – Quo vadit? *Veterinary Parasitology*, 139:371–384.
- JAIN, N.C. 1993. *Essentials of veterinary haematology*. New York: Lea and Febiger.
- KAHN, L.P., KNOX, M.R., GRAY, G.D., LEA, J.M. & WALKDEN-BROWN, S.W. 2003. Enhancing immunity to nematode parasites in single-bearing Merino ewes through nutrition and genetic selection. *Veterinary Parasitology*, 112:211–225.
- KAHN, L.P., NORMAN, T.M., WALKDEN-BROWN, S.W. & O'CONNOR, L.J. 2007. Trapping efficacy of *Duddingtonia flagrans* against *Haemonchus contortus* at temperatures existing at lambing in Australia. *Veterinary Parasitology*, 146:83–89.
- KAO, R.R., LEATHWICK, D.M., ROBERTS, M.G. & SUTHERLAND, I.A. 2000. Nematode parasites of sheep: a survey of epidemiological parameters and their application in a simple model. *Parasitology*, 121:85–103.

- KAPLAN, R.M., BURKE, J.M., TERRILL, T.H., MILLER, J.E., GETZ, W.R., MOBINI, S., VALENCIA, E., WILLIAMS, M.J., WILLIAMSON, L.H., LARSEN, M. & VATTA, A.F. 2004. Validation of the FAMACHA[®] eye color chart for detecting clinical anemia in sheep and goats on farms in the southern United States. *Veterinary Parasitology*, 123:105–120.
- KAWACHI, T., MARUYAMA, T. & SINGH, V.P. 2001. Rainfall entropy for delineation of water resources zones in Japan. *Journal of Hydrology*, 246:36–44.
- KENT, M. & COKER, P. 1997. *Vegetation description and analysis. A practical approach*. Chichester: John Wiley and Sons.
- KIRKMAN, K.P. & MOORE, A. 1995. Veld management strategies for livestock farmers in the sourveld regions of South Africa. *Bulletin of the Grassland Society of South Africa*, 6:25–28.
- KLEIN, S.L. 2000. The effects of hormones on sex differences in infection: from genes to behaviour. *Neuroscience and Biobehavioural Reviews*, 24:627–638.
- KNOX, M. & STEEL, J. 1996. Nutritional enhancement of parasite control in small ruminant production systems in developing countries of South-East Asia and the Pacific. *International Journal for Parasitology*, 26:963–970.
- KOTZE, A.C., DOBSON, R.J. & CHANDLER, D. 2006. Synergism of rotenone by piperonyl butoxide in *Haemonchus contortus* and *Trichostrongylus colubriformis* *in vitro*: potential for drug-synergism through inhibition of nematode oxidative detoxification pathways. *Veterinary Parasitology*, 136:275–282.
- KRECEK, R.C., GROENEVELD, H.T. & MARITZ, J. 1992. A preliminary study of the effect of microclimate on third-stage larvae of *Haemonchus contortus* and *Haemonchus placei* on irrigated pasture. *International Journal for Parasitology*, 22: 747–752.
- LARSEN, M., FAEDO, M. & WALLER, P.J. 1994. The potential of nematophagous fungi to control the free-living stages of nematode parasites of sheep: studies with *Duddingtonia flagrans*. *Veterinary Parasitology*, 5:275–281.
- LEARMOUNT, J., TAYLOR, M.A., SMITH, G. & MORGAN, C. 2006. A computer model to simulate control of parasitic gastroenteritis in sheep on UK farms. *Veterinary Parasitology*, 142:312–329.

- LEATHWICK, D.M. 1995. A case of moxidectin failing to control ivermectin resistant *Ostertagia* species in goats. *Veterinary Record*, 136:443–444.
- LEATHWICK, D.M., VLASSOFF, A. & BARLOW, N.D. 1995. A model for nematodiasis in New Zealand lambs: the effect of drenching regime and grazing management on the development of anthelmintic resistance. *International Journal for Parasitology*, 25:1479–1490.
- LEATHWICK, D.M., WAGHORN, T.S., MILLER, C.M., ATKINSON, D.S., HAACK, N.A. & OLIVER, A.M. 2006. Selective and on-demand drenching of lambs: impact on parasite populations and performance of lambs. *New Zealand Veterinary Journal*, 54:305–312.
- LE JAMBRE, L.F., DOBSON, R.J., LENANE, I.J. & BARNES, E.H. 1999. Selection for anthelmintic resistance by macrocyclic lactones in *Haemonchus contortus*. *International Journal for Parasitology*, 29:1101–1111.
- LINDEN, A. 2006. Measuring diagnostic and predictive accuracy in disease management: an introduction to receiver operating characteristic (ROC) analysis. *Journal of Evaluation in Clinical Practice*, 12:132–139.
- LINDQVIST, R. & WESTÖÖ, A. 2000. Quantitative risk assessment for *Listeria monocytogenes* in smoked or gravid salmon and rainbow trout in Sweden. *International Journal of Food Microbiology*, 58:181–196.
- LOVE, S.C.J., NEILSON, F.J.A., BIDDLE, A.J. & MCKINNON, R. 2003. Moxidectin-resistant *Haemonchus contortus* in sheep in northern New South Wales. *Australian Veterinary Journal*, 81:359-360.
- MALAN, F.S. & VAN WYK, J.A. 1992. The packed cell volume and colour of the conjunctivae as aids for monitoring *Haemonchus contortus* infections in sheep. *Proceedings of the South African Veterinary Association Biennial National Veterinary Congress, Grahamstown 1992*:139.
- MALAN, F.S., HORAK, I.G., DE VOS, V. & VAN WYK, J.A. 1997. Wildlife parasites: lessons for parasite control in livestock. *Veterinary Parasitology*, 71:137–153.
- MALAN, F.S., VAN WYK, J.A. & WESSELS, C.J. 2001. Clinical evaluation of anaemia in sheep: early trials. *Onderstepoort Journal of Veterinary Research*, 68:165–174.

- MARLEY, C.L., FRASER, M.D., DAVIES, D.A., REES, M.E., VALE, J.E. & FORBES, A.B. 2006. The effect of mixed or sequential grazing of cattle and sheep on the faecal egg counts and growth rates of weaned lambs when treated with anthelmintics. *Veterinary Parasitology*, 142:134–141.
- MARTIN, C.J. & CLUNIES-ROSS, I. 1934. A minimal computation of the amount of blood removed daily by *Haemonchus contortus*. *Journal of Helminthology*, 12:137–142.
- MARTIN, P.J., LE JAMBRE, L.F. & CLAXTON, J.H. 1981. The impact of refugia on the development of thiabendazole resistance in *Haemonchus contortus*. *International Journal for Parasitology*, 11:35–41.
- MARTIN, P.J. 1989. Selection for thiabendazole resistance in *Ostertagia* spp. by low efficiency anthelmintic treatment. *International Journal for Parasitology*, 19:317–325.
- MARTIN, R.J., PURCELL, J., ROBERTSON, A.P. & VALKANOV, M.A. 2002. Nematode organisation and control in nematodes, in *The biology of nematodes*, edited by D.L. Lee. London: Taylor & Francis, pp321–330.
- MARUYAMA, T., KAWACHI, T. & SINGH, V.P. 2005. Entropy-based assessment and clustering of potential water resources availability. *Journal of Hydrology*, 309:104–113.
- McCLURE, S.J., McCLURE, T.J. & EMERY, D.L. 1999. Effects of molybdenum intake on primary infection and subsequent challenge by the nematode parasite *Trichostrongylus colubriformis* in weaned Merino lambs. *Research in Veterinary Science*, 67:17–22.
- McCULLOCH, B., KUHN, H.G. & DALBOCK, R.R. 1984. The relation of climate and topography to worm egg counts of gastro-intestinal nematodes of sheep in the Eastern Cape. *Onderstepoort Journal of Veterinary Research*, 51:223–238.
- McKELLAR, Q.A. 1994. Chemotherapy and delivery systems - helminths. *Veterinary Parasitology*, 54:249–258.
- McKENNA, P.B. 1996. Anthelmintic resistance in cattle nematodes in New Zealand: is it increasing? *New Zealand Veterinary Journal*, 44:96.

- McLEOD, R.S. 1995. Costs of major parasites to the Australian livestock industries. *International Journal for Parasitology*, 25:1363–1367.
- MICHEL, J.F. 1976. The epidemiology and control of some nematode infections in grazing animals, in *Advances in Parasitology*, edited by B. Dawes. *Advances in Parasitology*, 14:355–397.
- MICHEL, J.F. 1985. Strategies for the use of anthelmintics in livestock and their implications for the development of drug resistance. *Parasitology*, 90:621–628.
- MILCZEWSKI, V., SOTOMAIOR, C.S., SCHWARTZ, M.G., BARROS FILHO, I.R., MORALES, F.R. & SCHMIDT-POPAZOGLO, E.M.S. 2003. Evaluation of the training on FAMACHA® method. *Proceedings: III Congreso Latino Americano de Especialistas en Pequeños Ruminantes y Camelidos Sulamericanos, Vino del Mar, Chile 2003*: no page numbers.
- MOLENTO, M.B., TASCA, C., GALLO, A., FERREIRA, M., BONONI, R. & STECCA, E. 2004a. FAMACHA guide as an individual clinic parameter for *Haemonchus contortus* infection in small ruminants. *Ciência Rural*, 34:1139–1145.
- MOLENTO, M.B., VAN WYK, J.A. & COLES, G.C. 2004b. Sustainable worm management. *Veterinary Record*, 17:95–96.
- MOORE, A., VAN WYK, J.A., 1997. Weidingsbestuur en haarwurmbeheer by skape. *Goue Vag*, Junie, pp 6–7.
- MUGAMBI, J.M., AUDHO, J.O., NGOMO, S. & BAKER, R.L. 2005. Evaluation of the phenotypic performance of a Red Maasai and Dorper double backcross resource population: indoor trickle challenge with *Haemonchus contortus*. *Veterinary Parasitology*, 127:263–275.
- MULLER, G.L. 1964. Nematode parasitism of sheep in the South Western Districts of the Cape Province. Part II – A survey of worm egg counts in ewes, yearlings and lambs. *Journal of the South African Veterinary Medical Association*, 35:585–601.
- MULLER, G.L. 1968. The epizootiology of helminth infestation in sheep in the south-western districts of the Cape. *Onderstepoort Journal of Veterinary Research*, 35:159–194.

- MURRAY, N. 2004. *Handbook on import risk analysis for animals and animal products*, 2. Paris: OIE.
- NEWTON, S.E., MORRISH, L.E., MARTIN, P.J., MONTAGUES, P.E. & ROLPH, T.P. 1995. Protection against multiply drug resistant and geographically distinct strains of *Haemonchus contortus* by vaccination with H11, a gut membrane-derived protective antigen. *International Journal for Parasitology*, 25:511–521.
- O’CONNOR, L.J., WALKDEN-BROWN, S.W. & KAHN, L.P. 2006. Ecology of the free-living stages of major trichostrongylid parasites of sheep. *Veterinary Parasitology*, 142:1–15.
- O’CONNOR, L.J., KAHN, L.P. & WALKDEN-BROWN, S.W. 2007. The effects of amount, timing and distribution of simulated rainfall on the development of *Haemonchus contortus* to the infective larval stage. *Veterinary Parasitology*, 146:90–101.
- ONYIAH, L.C. 1985. A stochastic development fraction model for predicting the development of the nematode parasite of sheep, *Haemonchus contortus*, from egg to infective larvae under the influence of temperature. *Journal of Thermal Biology*, 10:191–197.
- OWEN, N.C. 1968. The pathological physiology of haemonchosis in sheep. M.Med.Vet. thesis, University of Pretoria.
- PANCHADCHARAM, C. 2004. Problems in the control of nematode parasites of small ruminants in Malaysia: resistance to anthelmintics and the biological control alternative. Ph.D. thesis, Swedish University of Agricultural Sciences.
- PAOLINI, V., BERGEAUD, J. P., GRISEZ, C., PREVOT, F., DORCHIES, P. & HOSTE, H. 2003. Effects of condensed tannins on goats experimentally infected with *Haemonchus contortus*. *Veterinary Parasitology*, 113:253–261.
- PARNELL, I.W. 1963. Observations on the seasonal variations in the worm burdens of young sheep in south western Australia. *Journal of Helminthology*, 36:161–188.
- PATON, G., THOMAS, R.J. & WALLER, P.J. 1984. A prediction model for parasitic gastro-enteritis in lambs. *International Journal for Parasitology*, 14:439–445.

- PEÑA, M.T., MILLER, J.E., FONTENOT, M.E., GILLESPIE, A. & LARSEN, M. 2002. Evaluation of *Duddingtonia flagrans* in reducing infective larvae of *Haemonchus contortus* in faeces of sheep. *Veterinary Parasitology*, 103:259–265.
- PERRY, B.D. & RANDOLPH, T.F. 1999. Improving the assessment of the economic impact of parasitic diseases and of their control in production animals. *Veterinary Parasitology*, 84:145–168.
- PESSOA, L.M., MORAIS, S.M., BEVILAQUA, C.M.L. & LUCIANO, J.H.S. 2002. Anthelmintic activity of essential oil of *Ocimum gratissimum* Linn. and eugenol against *Haemonchus contortus*. *Veterinary Parasitology*, 109:59–63.
- POOK, J.F., POWER, N.C., SANGSTER, N.C., HODGSON, J.L. & HODGSON, D.R. 2002. Evaluation of tests for anthelmintic resistance in cyathostomes. *Veterinary Parasitology*, 106:331–343.
- REINECKE, R.K. 1983. *Veterinary helminthology*. Durban: Butterworth Publishers.
- RHODES, A.P., LEATHWICK, D.M., POMROY, W.E., WEST, D.M., JACKSON, R., LAWRENCE, K., MOFFAT, J. & WAGHORN, T.S. 2006. A profile of anthelmintic resistance and parasite control practices in New Zealand - results from a 2005 survey. *Proceedings of the New Zealand Society for Animal Production*, 66:14–19.
- ROBERTS, J.L. & SWAN, R.A. 1982. Quantitative studies of ovine haemonchosis. 2. Relationship between total worm counts of *Haemonchus contortus*, haemoglobin values and bodyweight. *Veterinary Parasitology*, 9:201–209.
- ROSE, J.H. 1970. Parasitic gastroenteritis in cattle: factors influencing the time of the increase in the worm population of pastures. *Research in Veterinary Science*, 11:199–208.
- ROSSITER, L.W. 1961. Helminth research in South Africa II. Seasonal incidence of nematode parasites of small stock in the Grahamstown area. *Journal of the South African Veterinary Medical Association*, 32:157–162.
- SHANNON, C.E. 1948. A mathematical theory of communication. *The Bell System Technical Journal*, 27:379–423.
- SHERIFF, J.C., KOTZE, A.C., SANGSTER, N. & HENNESSY, D.R. 2005. Effect of ivermectin on feeding by *Haemonchus contortus* *in vivo*. *Veterinary Parasitology*, 128:341–346.

- SILVA, V., CAVALCANTI, E.P. & NASCIMENTO, M.G. 2003. Use of entropy in analysis of rainfall and air temperature. *Revista Brasileira de Engenharia Agrícola e Ambiental*, 7:269–274.
- SINGH, V.P. 2000. The entropy theory as a tool for modelling and decision-making in environmental and water resources. *Water SA*, 26:1–11.
- SMITH, G. 1997. The economics of parasite control: obstacles to creating reliable models. *Veterinary Parasitology*, 72:437–449.
- SMITH, G. & GRENFELL, B.T. 1994. Modelling of parasite populations: gastrointestinal nematode models. *Veterinary Parasitology*, 54:127–143.
- SMITH, W.D. 1999. Prospects for vaccines of helminth parasites of grazing ruminants. *International Journal for Parasitology*, 29:17–24.
- SMITH, W.D. & ZARLENGA, D.S. 2006. Developments and hurdles in generating vaccines for controlling helminth parasites of grazing ruminants. *Veterinary Parasitology*, 139:347–359.
- SMITH, W.D. 2007. Attempts to detect synergy between vaccination and anthelmintic against a drug resistant isolate of *Haemonchus contortus*. *Veterinary Parasitology*, 148:356–359.
- SONUGA, J.O. 1976. Entropy principle applied to the rainfall-runoff process. *Journal of Hydrology*, 30:81–94.
- SOTOMAIOR, C.S., CALDAS, J.S., IARK, P., BENVENUTTI, T. & RODRIGUES, N. 2003a. Use of the FAMACHA[®] system in goats. *Proceedings: III Congreso Latino Americano de Especialistas en Pequeños Rumiantes y Camelidos Sulamericanos, Vino del Mar, Chile 2003*.
- SOTOMAIOR, C.S., MILCZEWSKI, V., IARK, P., CALDAS, J.S., BENVENUTTI, T., SILLAS, R. & SCHWARTZ, M.G. 2003b. Use of the FAMACHA[®] System in commercial sheep flocks. *Proceedings: III Congreso Latino Americano de Especialistas en Pequeños Rumiantes y Camelidos Sulamericanos, Vino del Mar, Chile 2003*.

- SOTOMAIOR, C.S., MILCZEWSKI, V., MORALES, F.R. & SCHWARTZ, M.G. 2003c. Evaluation of the FAMACHA® system: accuracy of anemia estimation and the use of the method on commercial sheep flocks. *Proceedings: III Congreso Latino Americano de Especialistas en Pequeños Rumiantes y Camelidos Sulamericanos, Vino del Mar, Chile 2003.*
- SOULSBY, E.J.L. 1982. *Helminths, arthropods and protozoa of domesticated animals*, 7th ed. London: Bailliere Tindall.
- STOCKHAM, S. & SCOTT, M.A. 2002. *Fundamentals of veterinary clinical pathology*. Ames: Iowa State Press.
- SUTER, R.J., BESIER, R.B., PERKINS, N.R., ROBERTSON, I.D. & CHAPMAN, H.M. 2004. Sheep-farm risk factors for ivermectin resistance in *Ostertagia circumcincta* in Western Australia. *Preventive Veterinary Medicine*, 63:257–259.
- SUTTLE, N.F., KNOX, D.P. JACKSON, F., COOP, R.L. & ANGUS, K.W. 1992. Effects of dietary molybdenum on nematode and host during *Trichostrongylus vitrinus* infection in lambs. *Research in Veterinary Science*, 52:224–229.
- TAYLOR, M.A., HUNT, K.R. & GOODYEAR, K.L. 2002a. Anthelmintic resistance detection methods. *Veterinary Parasitology*, 103:183–194.
- TAYLOR, M.A., HUNT, K.R. & GOODYEAR, K.L. 2002b. The effects of stage-specific selection on the development of benzimidazole resistance in *Haemonchus contortus* in sheep. *Veterinary Parasitology*, 109:29–43.
- TERRILL, T.H., LARSEN, M., SAMPLES, O., HUSTED, S., MILLER, J.E., KAPLAN, R.M. & GELAYE, S. 2004. Capability of the nematode-trapping fungus *Duddingtonia flagrans* to reduce infective larvae of gastrointestinal nematodes in goat faeces in the southeastern United States: dose-titration and dose-time interval studies. *Veterinary Parasitology*, 120:285–296.
- THEILER, A. 1912. Wire-worms in sheep and their treatment. *South African Agricultural Journal*, Bulletin No. 63, 17pp.
- THOMAS, R.J. 1968. The epizootiology of nematode parasites of sheep in the highveld (1) Worm egg counts in lambs. *Journal of the South African Veterinary Medical Association*, 39:27–31.

- THOMAZ-SOCCOL, V., DE SOUZA, F.P., SOTOMAIOR, C., CASTRO, E.A., MILCZEWSKI, V., MOCELIN, G., PESSOA, E. & SILVA, M. DO C. 2004. Resistance of gastrointestinal nematodes to anthelmintics in sheep (*Ovis aries*). *Brazilian Archives of Biology and Technology*, 47:41–47.
- THRUSFIELD, M. 2001. *Veterinary epidemiology*. 2nd ed. Oxford: Blackwell Science.
- TOFT, N., INNOCENT, G.T., GETTINBY, G. & REID, S.W.J. 2007. Assessing the convergence of Markov Chain Monte Carlo methods: an example from evaluation of diagnostic tests in absence of a gold standard. *Preventive Veterinary Medicine*, 79:244–246.
- VAN HOUTERT, M.F.J., BARGER, I.A., STEEL, J.W., WINDON, R.G. & EMERY, D.L. 1995. Effects of dietary protein intake on responses of young sheep to infection with *Trichostrongylus colubriformis*. *Veterinary Parasitology*, 60:163–180.
- VAN WYK, J.A. 1985. The epidemiology and control of gastrointestinal nematode infestation of sheep and cattle in South Africa. 1. The historic role of Onderstepoort and a short discussion of present research priorities. *Onderstepoort Journal of Veterinary Research*, 49:215–219.
- VAN WYK, J.A. & MALAN, F.S. 1988. Resistance of field strains of *Haemonchus contortus* to ivermectin, closantel, rafoxanide and the benzimidazoles in South Africa. *The Veterinary Record*, 123:226–228.
- VAN WYK, J.A. 1990. Occurrence and dissemination of anthelmintic resistance in South Africa, and management of resistant worm strains, in *Resistance of parasites to antiparasitic drugs*, edited by J.C. Boray, P.J. Martin & R.T. Roush. *Round Table Conference, 7th International Congress of Parasitology, Paris, 1990*:103–113.
- VAN WYK, J.A. & VAN SCHALKWYK, P.C. 1990. A novel approach to the control of anthelmintic resistant *Haemonchus contortus* in sheep. *Veterinary Parasitology*, 35:61–69.
- VAN WYK, J.A., VAN SCHALKWYK, P.C., BATH, G.F., GERBER, H.M. & ALVES, R.M.R. 1991. Die gevaar van wye verspreiding van weerstandbiedendheid teen wurmmiddels deur veldramprestasietoetssentra/The threat of wide dissemination of anthelmintic resistance by veld ram performance testing units. *Journal of the South African Veterinary Association*, 62:171–175.

- VAN WYK, J.A., MALAN, F.S. & BATH, G.F. 1997a. Rampant anthelmintic resistance in sheep in South Africa - what are the options?, in *Managing anthelmintic resistance in endoparasites*, edited by J.A. van Wyk & P.C. van Schalkwyk. *Proceedings of the 16th International Conference of the W.A.A.V.P., Sun City 1997*:51–60.
- VAN WYK, J.A., MALAN, F.S. & RANGLES, J.L. 1997b. How long before resistance makes it impossible to control some field trains of *Haemonchus contortus* in South Africa with any of the anthelmintics? *Veterinary Parasitology*, 70:111–122.
- VAN WYK, J.A., STENSON, M.O., VAN DER MERWE, R.J., VORSTER, R.J. & VILJOEN, P.G. 1999. Anthelmintic resistance in South Africa: Surveys indicate an extremely serious situation in sheep and goat farming. *Onderstepoort Journal of Veterinary Research*, 66:273–284.
- VAN WYK, J.A. 2001. Refugia-overlooked as perhaps the most potent factor concerning the development of anthelmintic resistance. *Onderstepoort Journal of Veterinary Research*, 68:55–67.
- VAN WYK, J.A., BATH, G.F., GROENEVELD, H.T., STENSON, M.O. & MALAN, F.S. 2001a. Extensive testing of the FAMACHA[®] system for accuracy of clinical evaluation of anaemia caused by ovine haemonchosis. *Proceedings of the 5th International Sheep Veterinary Congress, Stellenbosch, 2001*:21–25.
- VAN WYK, J.A., VAN WIJK, E.F., STENSON, M.O. & BARNARD, S.H. 2001b. Anthelmintic resistance reverted by dilution with a susceptible strain of *Haemonchus contortus* in the field: Preliminary report. *Proceedings of the 5th International Sheep Veterinary Congress, Stellenbosch, 2001*:194–195.
- VAN WYK, J.A. 2002. Principles for the use of macrocyclic lactones to minimise selection for resistance. *Australian Veterinary Journal*, 80:437–438.
- VAN WYK, J.A. & BATH, G.F. 2002. The FAMACHA[®] system for managing haemonchosis in sheep and goats by clinically identifying individual animals for treatment. *Veterinary Research*, 33:509–529.
- VAN WYK, J.A. 2003. Think refugia or lose the battle against drug resistance. *Proceedings of the 5th International Seminar for Animal Parasitology, Mexico, 2003*: 39–47.

- VAN WYK, J.A. 2006. Face facts: drenching with anthelmintics for worm control selects for worm resistance - and no excuses! *Proceedings of the New Zealand Society for Animal Production*, 4–13.
- VAN WYK, J.A., HOSTE, H., KAPLAN, R.M. & BESIEN, R.B. 2006. Targeted selective treatment for worm management - how do we sell rational programs to farmers? *Veterinary Parasitology*, 139:336–346.
- VATTA, A.F. 2001. Incidence, clinical appraisal and treatment of haemonchosis in small ruminants of resource-poor areas in South Africa. M.Sc. thesis, University of Pretoria.
- VATTA, A.F., LETTY, B.A., VAN DER LINDE, M.J., VAN WIJK, E.F., HANSEN, J.W. & KRECEK, R.C. 2001. Testing for clinical anemia caused by *Haemonchus* spp. in goats farmed under resource-poor conditions in South Africa using an eye color chart used for sheep. *Veterinary Parasitology*, 99:1–14.
- VATTA, A.F. & LINDBERG, A.L.E. 2006. Managing anthelmintic resistance in small ruminant livestock of resource-poor farmers in South Africa. *Journal of the South African Veterinary Association*, 77:2–8.
- VEGLIA, F. 1915. Anatomy and life-history of the *Haemonchus contortus* (Rud). Union of South Africa. Department of Agriculture: *Third and Fourth reports of the Director of Veterinary Research, Union of South Africa*, pp 349–500.
- VEGLIA, F. 1918. Chemotherapy of haemonchosis in sheep. *Fifth and Sixth reports of the Director of Veterinary Research, Union of South Africa*, pp 375–482.
- VILJOEN, J.H. 1964. The epizootiology of nematode parasites of sheep in the Karoo. *Onderstepoort Journal of Veterinary Research*, 31:133–142.
- VOSE, D. 1998. The application of quantitative risk assessment to microbial food safety. *Journal of Food Protection*, 61:640–648.
- VOSE, D. 2000. *Risk analysis: a quantitative guide*. Chichester: Wiley.
- WALKDEN-BROWN, S.W. & EADY, S.J. 2003. Nutritional influences on the expression of genotypic resistance to gastrointestinal nematode infection in sheep. *Australian Journal of Experimental Agriculture*, 43:1445–1454.
- WALLER, P.J. 1987. Anthelmintic resistance and the future for roundworm control. *Veterinary Parasitology*, 25:177–191.

- WALLER, P.J. 1997. Anthelmintic resistance. *Veterinary Parasitology*, 72:391–412.
- WALLER, P.J. 1999. International approaches to the concept of integrated control of nematode parasites of livestock. *International Journal for Parasitology*, 29:155–164.
- WALLER, P.J. 2003. The future of anthelmintics in sustainable parasite control programs for livestock. *Helminthologia*, 40:97–102.
- WHITFIELD, P.J. 1994. Parasitic helminths, in *Modern parasitology: a textbook of parasitology*, edited by F.E.G. Cox. 2nd ed. London: Blackwell Scientific, p50.
- WILSON, K., GRENFELL, B.T. & SHAW, D.J. 1996. Analysis of aggregated parasite distributions: a comparison of methods. *Functional Ecology*, 10:592–601.
- ZAJAC, A.M., HERD, R.P. & McCLURE, K.E. 1988. Trichostrongylid parasite populations in pregnant or lactating and unmated Florida Native and Dorset Rambouillet ewes. *International Journal for Parasitology*, 18:981–985.
- ZWEIG, M.H. & CAMPBELL, G. 1993. Receiver-Operating Characteristic (ROC) plots: a fundamental evaluation tool in clinical medicine. *Clinical Chemistry*, 39:561–577.