LIGHT TRAP COLLECTION COMPARISONS

G. Venter1,2* K. Labuschagne1,3 J. Liebenberg4 K. Hermanides1 S. Boikanyo1 D. Majatladi1 T. van der Linde4

Awareness of all potential vectors of the viruses of bluetongue and African horse sickness is crucial for the implementation of integrated control measures, risk analysis and disease management. The primary monitoring tools used for the collection of Culicoides midges are various models of suction light traps. In order to facilitate comparison of data between laboratories, the efficiency of the Onderstepoort, Rieb, mini-CDC, Pirbright and BG-sentinel, used at present and during the past in Europe, was compared in the field in South Africa. In a separate series of comparisons, the influence of trap height, the presence of hosts and the addition of octenol to the trap on species composition and number of Culicoides midges collected were determined. Comparisons were done in an appropriate number of replicates of a randomized Latin square design. The Onderstepoort trap collected significantly more Culicoides midges in summer and in winter than the other traps. It was found that relatively small variations in the height at which the trap is deployed can have a significant influence on the number of midges collected. Although these results seem to indicate a height preference for C. imicola it needs to be determined to what extent environmental factors, the presence of nearby structures, other light sources and hosts near the trap might have on the height at which Culicoides midges will fly. Significant differences were found in the number of Culicoides and especially C. imicola numbers collected at various distances from host animals. Statistically significant higher numbers and proportions of C. imicola were collected immediately next to the animals compared to collections made 5 to 30 m away from animals. The addition of 1-octen-3-ol (9.1 mg/h) and 4-methylphenol (15.5 mg/h) did not have any significant influence on the number of Culicoides collected with the Onderstepoort trap. Relatively small but statistically significant differences were found in the species composition, parous rates, sex ratios as well as the ratio of Culicoides midges to other insects, as determined by the different collection regimes. Despite a great variety of factors that can influence light trap results, it remains the most reliable and practical way to determine species richness and abundance in an area. The results of this study highlighted a few factors that may influence the numbers of Culicoides midges collected and the problems involved in the reliable comparison of light trap data between different collection sites. It emphasized the need for the standardization of techniques for measuring the variables of vectorial capacity.

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1. Agricultural Research Council – Onderstepoort Veterinary Institute, Onderstepoort 0110, South Africa.
2. Department of Veterinary Tropical Diseases, Faculty of Veterinary Science, University of Pretoria, Private Bag X04, Onderstepoort 0110, South Africa.
3. Department of Zoology and Entomology, University of Pretoria, Pretoria, South Africa.
4. Department of Zoology and Entomology, University of the Free State, Bloemfontein, South Africa.

* Corresponding author
Tel.: +27 1 25 29 91 81; Fax: +27 1 25 29 91 80
E-mail: VenterG@arc.agric.za

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