

# Validation of iSperm analyzer for assessing ram semen quality

K. Gillespie, BS; J. Stewart, DVM, PhD, MS, DACT

Department of Large Animal Clinical Sciences, Virginia-Maryland College of Veterinary Medicine, Virginia Tech, Blacksburg, VA 24061

## Introduction

The objective of this study was to evaluate a portable iSperm semen analyzer for determination of sperm motility and concentration in rams.

## Materials and methods

Ejaculates were collected from 17 rams over 2 replicates and diluted in Optixcell extender. Samples were analyzed on site from 2-3 rams per day using the iSperm (ISPERM1) and preserved in formalin for concentration measurement by hemocytometer. Samples were transported to the lab to be assessed on the iSperm (ISPERM2) and a benchtop analyzer with Spermvision software (CASA). Sperm concentration, total motility (TM), progressive motility (PM), curvilinear velocity (VCL), average path velocity (VAP), straight line velocity (VSL), straightness (STR) and linearity (LIN) were assessed. Data was analyzed in R using ANOVA and Pearson correlation coefficient.

## Results

Motility and velocity parameters were significantly and positively correlated between the ISPERM1, ISPERM2 and CASA with greater correlations between ISPERM2 and CASA ( $r \geq 0.6$ ,  $P < 0.01$ ). TM did not differ between programs ( $P = 0.24$ ), but PM was less for ISPERM2 ( $23 \pm 2.5\%$ ;  $P < 0.01$ ) than ISPERM1 ( $50 \pm 2.9\%$ ) or CASA ( $60 \pm 4.1\%$ ). VCL was less for ISPERM2 ( $P < 0.01$ ) than for ISPERM1 or CASA. VAP, VSL, and STR were greatest in ISPERM1 ( $P \leq 0.03$ ) and did not differ between ISPERM2 and CASA ( $P \geq 0.42$ ). LIN differed between all three ( $P < 0.01$ ). Sperm concentration did not differ between the hemocytometer and ISPERM2 ( $P = 0.65$ ) but was greater with ISPERM1 ( $P = 0.03$ ) and less with CASA ( $P = 0.01$ ).

## Significance

In summary, the results of this study show that the iSperm analyzer could be useful for field sperm analyses in rams. Further validation studies are needed to determine if lower dilutions could improve its analysis of sperm motility, velocity parameters, and concentration.

