

Dosing frozen bovine semen based on progressively motile spermatozoa per dose using an automated sperm quality analyzer

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Objective

The objective of the study was to determine whether frozen bovine semen AI doses could be effectively and efficiently produced based on a constant number of progressively motile sperm cells per dose, using the SQA-Vb analyzer as the measurement device and accompanying B-Sperm software as the dosing tool.

Goal

The goal was to produce frozen bovine semen doses with a constant number of post thaw progressively motile sperm cells per dose in a commercial farm environment.

Study overview

In order to insure consistency in post thaw doses, a two phase trial was conducted using an automated bovine sperm quality analyzer and dosing software, SQA-Vb and B-Sperm software (MES, Caesarea, Israel).

Phase I: Twenty five ejaculates from five different bulls (Sion A.I. Company, Israel) were collected following standard procedures using an artificial vagina. The 25 ejaculates were tested for progressive motility using the SQA-Vb in order to establish an average percent of progressively motile sperm for each bull. Samples were then frozen and re-tested after thawing using the SQA-Vb to determine the "freezing motility loss" factor unique to each bull.

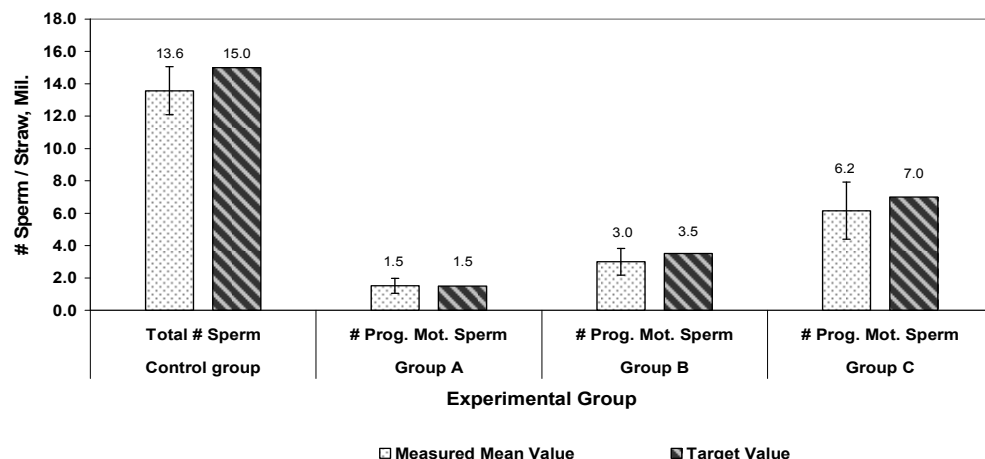
Phase II: Ten thousand straws were frozen using the SQA-V for testing and B-Sperm software to determine the dose of sperm. Each ejaculate was split into four different target groups.

Three groups were dosed based on progressively motile sperm targets post thaw (PMST): 1.5, 3.5, and 7 million progressively motile sperm cells per dose. The "freezing motility loss factor" unique to each bull was taken into consideration according to the following formula: PMST x "freezing motility loss factor".

One group was dosed based on the standard protocol of 15 million total sperm per dose and was used as the study control.

A total of 380 straws were tested post thaw using the SQA-Vb. PMST values were compared to the actual progressively motile sperm per dose results measured by the SQA-Vb. The results are presented in the table below.

Phase 2 Final Results : Measured Mean Values +/- Standard Deviation vs. Target Values in Post Thaw Straws



Summary

It is possible to produce commercial frozen bovine semen doses with a consistent number of progressively motile sperm cells per post thaw dose, unique to each bull. The SQA-Vb and B-Sperm software can be effectively used as the technology to measure, dose and control the quality of bovine AI dose samples based on both progressive motility and total sperm concentration.