

Comparison of one versus two doses of prostaglandin F2 alpha in a 5-day, progesterone-based synchronization protocol in Angus-cross beef cows

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The objective was to compare reproductive performance of Angus-cross beef cows synchronized with GnRH, a progesterone-releasing intravaginal device (CIDR) for 5 d, and one dose of either dinoprost tromethamine (PGF) or cloprostenol sodium (CLP), or two doses of PGF on the day of CIDR withdrawal. Angus-cross beef cows ($N = 830$) at six locations received 100 µg of GnRH and a CIDR on Day 0; the CIDR was subsequently removed on Day 5 (in the morning). Cows were fitted with a pressure-sensitive estrus detection device (Kamar) at CIDR withdrawal. Within farm, cows were randomly allocated to receive: 25 mg of PGF at CIDR removal (1XPGF; $n = 277$); or 25 mg of PGF at CIDR removal, and again 7 h later (2XPGF; $n = 282$); or 500 mg of CLP at CIDR removal (1XCLP; $N = 271$). On Day 8 (72 h after CIDR removal), all cows were given 100 µg of GnRH and concurrently inseminated.

Data were analyzed using a Glimmix model (SAS 9.1; SAS Institute, Cary, NC, USA). Accounting for other significant variables such as AI sire ($P < 0.05$) and cows that exhibited estrus at or prior to the time of AI ($P < 0.0001$), timed-AI pregnancy rates were greater ($P < 0.0001$) in the 2XPGF (69.0%) than the 1XPGF (52.0%) and 1XCLP (54.3%) treatments. Accounting for body condition score at the initiation of synchronization protocols ($P < 0.05$), breeding-season pregnancy rates were not different among 2XPGF, 1XPGF and 1XCLP treatment groups, 92.9, 87.0, and 87.5%, respectively

($P > 0.1$). The treatment $\times$ location interaction for pregnancy rate approached significance for timed-AI ($P = 0.09$) and was significant ($P < 0.01$) for breeding season pregnancy rate.

In conclusion, cows that received two doses of PGF on the day of CIDR removal in a 5-d CO-Synch + CIDR synchronization protocol had higher timed-AI pregnancy rates than cows receiving a single treatment with either PGF or CLP (at CIDR removal).

Keywords: Estrus synchronization; CIDR; PGF_{2a}; Pregnancy rate; Beef cattle

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Performance evaluation of the SQA-Vb automated sperm quality analyzer for bulls

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The objective was to compare the automated SQA-Vb (Medical Electronic Systems, Caesarea Industrial Park, Israel) test results to manual semen analysis data, to determine if the automated system is a viable alternative to the manual method. The SQA-Vb is an analytical sperm quality analyzer for bulls that performs a 45-s automated quantitative evaluation of fresh and frozen-thawed bull semen, including sperm concentration, motility, progressive motility, normal morphology, and velocity. The study was conducted at Sion AI laboratory (Israel). For fresh and frozen-thawed bull semen samples ($n = 101$ and $n = 30$, respectively), automated semen analysis results were compared to manual test data analyzed microscopically. Sperm concentration was measured using a Makler sperm counting chamber (Sefi-Medical Ltd., Haifa, Israel).

Table 1
Performance characteristics of SQA-Vb automated sperm quality analyzer

Semen sample	Semen parameter	CV (%)	Correlation to manual method (r)	Range
Fresh $n = 101$	Concentration ($\times 10^6$ /mL)	2.4	0.93	205.7–1900.0
	Motility (%)	4.1	0.81	4.2–99.1
	Progressive motility (%)	8.0	0.75	0.1–97.2
	Velocity (μ /s)	9.9	0.81	0–70
Frozen $n = 30$	Concentration ($\times 10^6$ /mL)	4.7	0.99	5.7–129.6
	Motility (%)	5.6	0.90	32.1–76.1
	Progressive motility (%)	6.0	0.71	15.2–42.9
	Velocity (μ /s)	3.6	0.86	0–70

Abbreviations: CV: coefficient of variation; r : correlation coefficient; n : no. samples.