Effect of FEEDZEN®250 Supplementation on Boar Semen Quality Following a Routine Stressor

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Boars at a commercial breeding facility are routinely exposed to handling, restraint, movement, and co-mingling during scheduled quality-assurance (QA) events, and with added heat stress during summer testing, semen quality was observed to decline in the weeks that follow [1-3]. The objective of this study was to evaluate whether FEEDZEN®250 (Probiotech International Inc.), an essential oil-based feed additive, could mitigate this stress-associated decline in semen quality at a breeding facility in Ontario.

Boars received FEEDZEN®250 at 250 g/ton of feed from two weeks before the bi-annual QA stressor event until eight weeks after (July to September 2025), covering the summer months. Because the facility could not accommodate simultaneous control and treated groups, the supplementation year (2025) was compared with the same 11-week period of the previous year (2024), which served as control. Semen was evaluated over two pre-stress weeks (Week 1–2), the stress week (Week 3), and eight post-stress weeks (Week 4–11); outcomes were total motility (%), volume (mL), concentration (10^9/mL), cells per ejaculate (volume × concentration; 10^9), and sperm deformities like proximal droplets, distal droplets, and bent tails (%). Daily values were averaged by week, and only boars matched between both years (n = 110) were used in the analyses. Repeated-measures ANOVA was performed in SAS 9.4, with Tukey-adjusted least squares means and significance declared at $p<0.05$.

Within 2024 (non-supplemented control), total semen motility, concentration and cells per ejaculate declined in the post-stress period relative to pre-stress ($p<0.0001$), confirming the negative impact of the stressful QA event; distal drop sperm deformity likewise increased following the stress period ($p<0.0001$). However, supplemented boars (2025) during the post-stress period, showed higher total motility ($p<0.0001$), greater volume ($p<0.0001$), and more cells per ejaculate ($p=0.043$) than in 2024, together with fewer deformities like proximal droplets ($p=0.007$), distal droplets ($p<0.0001$), and bent tails ($p<0.0001$). Weekly patterns showed that the post-stress dip in motility observed in 2024 (Week 5–8) did not occur under supplementation, with 2025 values higher in those weeks ($p<0.01$), while the reductions in distal droplets and bent tails started from the third post-stress week onward ($p<0.0001$). Motility was slightly lower in 2025 during the pre-stress, stress, and first post-stress weeks ($p<0.05$), making the subsequent recovery more notable. Concentration was lower in 2025 across all periods ($p<0.0001$), consistent with a dilution effect, as ejaculate volume was higher in 2025 from the pre-stress period onward. It is hypothesized that the boars drank more water because FEEDZEN®250 supports more water intake, especially during dehydrating conditions like heat stress; thus, it is possible that higher water intake contributed to higher ejaculate volume.

Overall, FEEDZEN®250 supplementation around a routine stressor was associated with better stress resilience and improved recovery of semen quality, with higher motility, volume, and cells per ejaculate and fewer morphological defects in the post-stress period. Feeding FEEDZEN®250

ahead of predictable stress events may offer boar studs a practical nutritional strategy to maintain semen quality through demanding periods such as heat stress and QA testing.

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