

# The Effects of Reduced Sperm Concentration and Semen Volume on the Reproductive Performance of Sows

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The huge expansion towards AI use in the swine industry is due to the benefits of cost, safety, health, genetic improvement and time management. Over time, the AI industry has increased the number of females bred by a single boar by reducing semen volume and sperm concentration per dose. The objectives of this trial were to determine whether further reductions in semen volume and sperm concentration were possible in a field setting, without affecting sow performance. In part 1 of this study, a total of 135 females, parity 0 to 7, on two farms were randomly assigned to either be inseminated with 1) 65 ml of pooled semen or 2) 75 ml of pooled semen containing at least 2.5 million morphologically normal sperm. In part 2 of this study, a total of 157 sows, parity 0 to 7, on three farms were randomly assigned to either insemination with 1) 2.5 billion or 2) 2 billion morphologically normal spermatozoa in a 75 ml dose of semen. Sows were heat checked daily and inseminated at the onset of standing heat and then again 24 h later. Twenty-five day pregnancy status (conception/return rate) was recorded. Farrowing will occur in December, at which time farrowing rate and subsequent litter size (total and live born) will be recorded. In both trials, if a sow returned to estrus she was removed from the trial. Return breeders were not included in the trials. Part 1: There was no significant difference in conception rate between the 65 ml (84%) and 75 ml (86.2%) dose of semen. Part 2: There was no significant difference in conception rate between the groups using 2.5 (85.7%) and 2.0 (83%) billion sperm per 75 ml dose of semen. Data on farrowing rate and litter size between treatment groups remains to be analyzed.

**Implications:** The preliminary data indicates that lower semen dose volumes and sperm concentrations do not compromise conception rate in sows of various parities. A half billion sperm per dose reduction results in an additional six doses per ejaculate capable of being made. However, it remains to be seen whether these treatments affect subsequent litter size and farrowing rate. If there are no differences in fertility between treatments, reducing the semen concentration or dose volume may be of significant economic benefit to the AI industry.