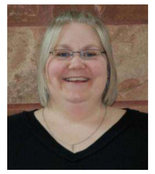
Methods to Identify Quality Roosters and Toms

M.E. MacKenzie, University of Alberta



mmackenz@ualberta.ca

The Why

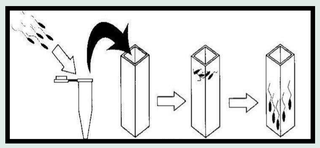
- Quality males are needed to produce high numbers of quality chicks. However, it is not possible to identify quality males by sight alone.
- Sperm mobility & sperm penetration are measures of male fertilizing ability & can aid in identifying quality males. Selecting males based on sperm mobility has resulted in higher numbers of chicks & poults being produced (1, 2).
- Poultry semen used for artificial insemination (AI) must be used quickly as storing or freezing decreases viability & fertilizing ability of the sperm.
- Semen examined from a genetic line of birds (selected over 8 generations) had sperm more resistant to the freezing damage & it was been suggested that a seminal protein was responsible (2).
- This preliminary research examines whether seminal proteins change with male age or semen storage.

The Approach

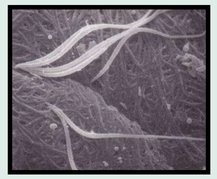
2 species, 3 ages &
3 semen storage times (1, 12 & 24 hr)

Roosters
45, 53 & 61
wks of age

Toms
40, 48 & 56
wks of age



Sperm Mobility & Concentration (3)

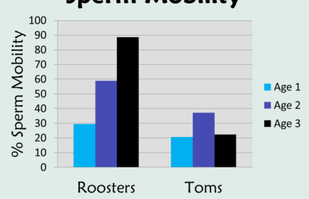


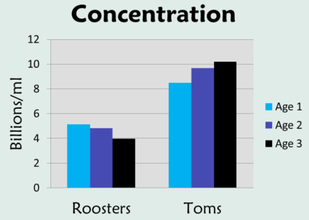
Sperm Penetrations (4,5)

Protein Profile

What Was Found

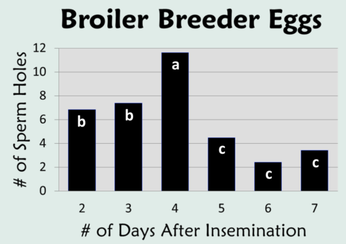
Sperm Mobility & Concentration



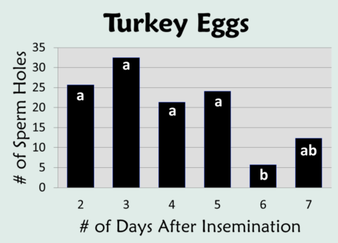


Sperm mobility & concentrations changed with each age for both roosters & toms

Sperm Penetrations

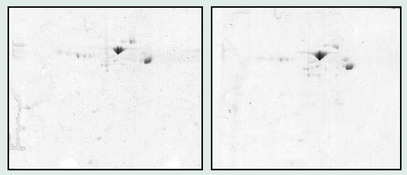


The # of sperm holes in broiler breeder eggs increased until they peaked at 4 d & decreasing for the last 3d



The # of sperm holes in turkey eggs dropped 6 d after insemination

Protein Profiles



Preliminary results show that the proteins did not change with age or semen storage time

Conclusions

- Using pooled samples possibly masked differences due to age & semen storage time for sperm mobility, concentration, sperm penetrations & protein profiles. This is because in each flock there were good & poor quality males.
- Further research is needed to determine if protein profiles can be used to identify quality males.
- Examining seminal protein profiles of males selected based on sperm mobility may reveal proteins that could be used as quality indicators.

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References: (1) Froman et al. 1997. Poult. Sci. 76:73-77. (2) Donoghue et al. 1999. J. Appl. Poult. Res. 8:214-221. (3) Bentley et al. 1984. Poult. Sci. 63:1444-1445. (4) Froman & McLean. 1996. Poult. Sci. 75:776-784. (5) Froman. 1994. Poultry Science Association, p.22. (6) Bramwell et al. 1995. Poult. Sci. 74:1875-1883.