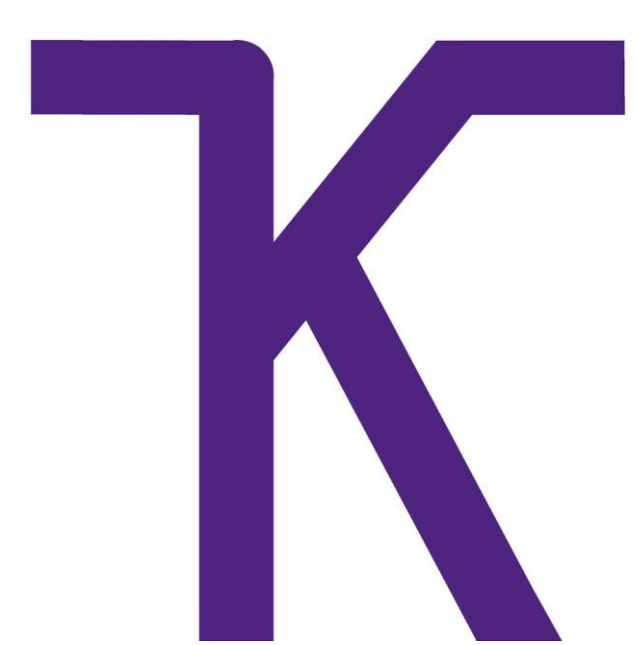




Effects of embryo production method and day of transfer post-estrus into recipients on pregnancy rates with bovine embryos

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Introduction

- Reproductive efficiency is the most important trait for beef production
- ET is the only way to capitalize on genetic advancement opportunities from a superior dam
- Pregnancy rates are critical for the success and return on investment in embryo transfer
- Conventionally-produced (in vivo) embryos result in greater pregnancy rates to ET than In Vitro Fertilization (IVF) embryos (Hasler, 2000)
- Different pregnancy rates are expected when asynchrony exceeds 24 hours between the donor and recipient estrous cycle (Schmidt, 2010)

Objective

- To evaluate potential effects of embryo production method and day of transfer post-estrus in recipients on pregnancy rates to embryo transfer.

Experimental Procedures

- 119 recipient beef cows each received one 7-d-old bovine embryo using standard insertion procedures (Donor Solutions, Rensselaer, IN; StockVets, LLC, Rensselaer, IN)
- Cows were randomly assigned an embryo based on the order of entrance into the chute
- Treatments (2 x 2 factorial)
 - Embryo production method: In Vitro Fertilization or Conventional (in vivo)
 - Embryo transfer day of recipients post-estrus (estrus = d 0) Early (d 4, 5, or 6) or Typical (d 7, 8)
- Embryos were stages 4 to 8 and grades 1 or 2
- Cows were housed in dry lots with automatic waters and ryelage based TMR fed 1 x d (High Quality Farms, LLC, Decatur, MI)
- 60 d post transfer cows were determined to be pregnant or not by transrectal ultra-sound
- Data was analyzed using GLIMMIX procedure of SAS with an alpha value of 0.05

Results

Figure 1. Pregnancy rate to embryo transfer with conventional and in vitro (IVF) fertilization embryo production methods

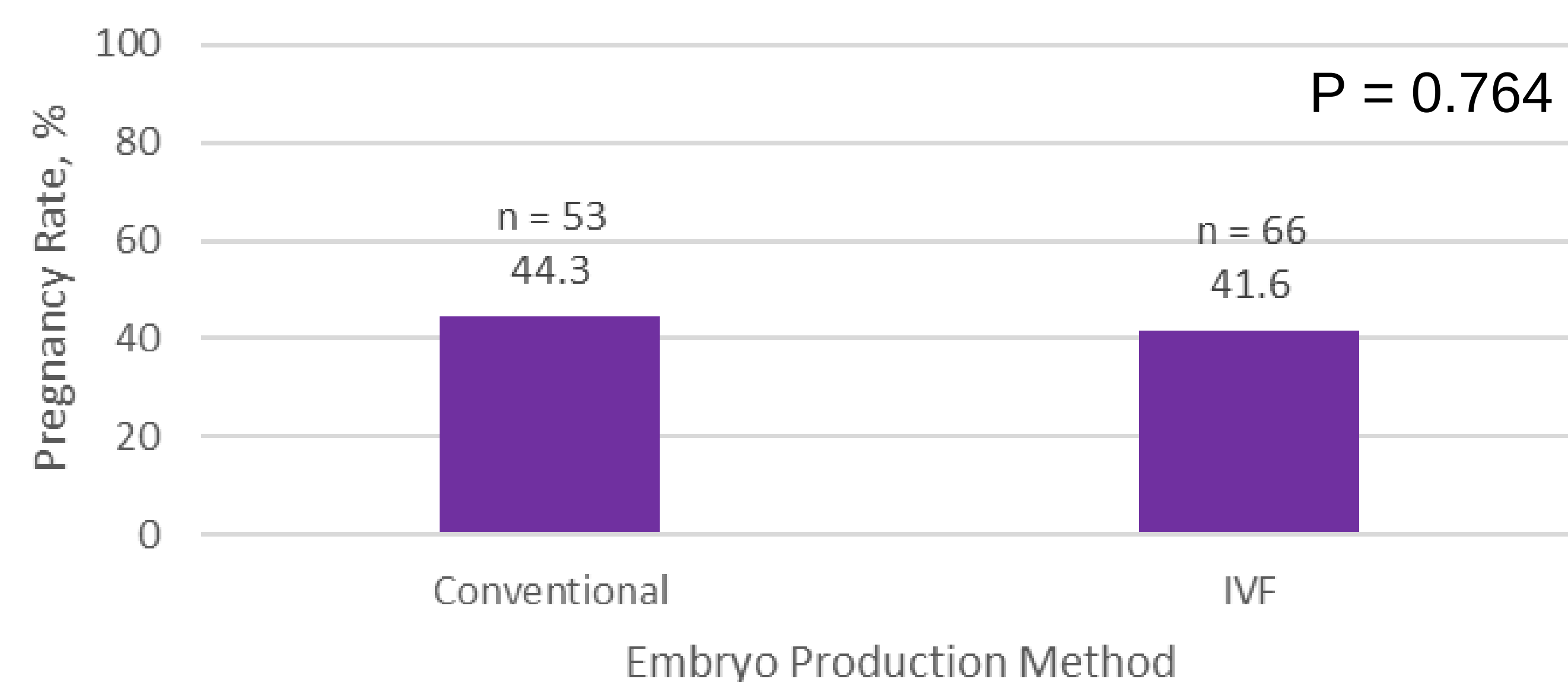


Figure 2. Pregnancy rate to embryo transfer with transfer of embryos occurring early (d 4, 5, or 6) to typical (d 7 or 8) days post-estrus in recipients

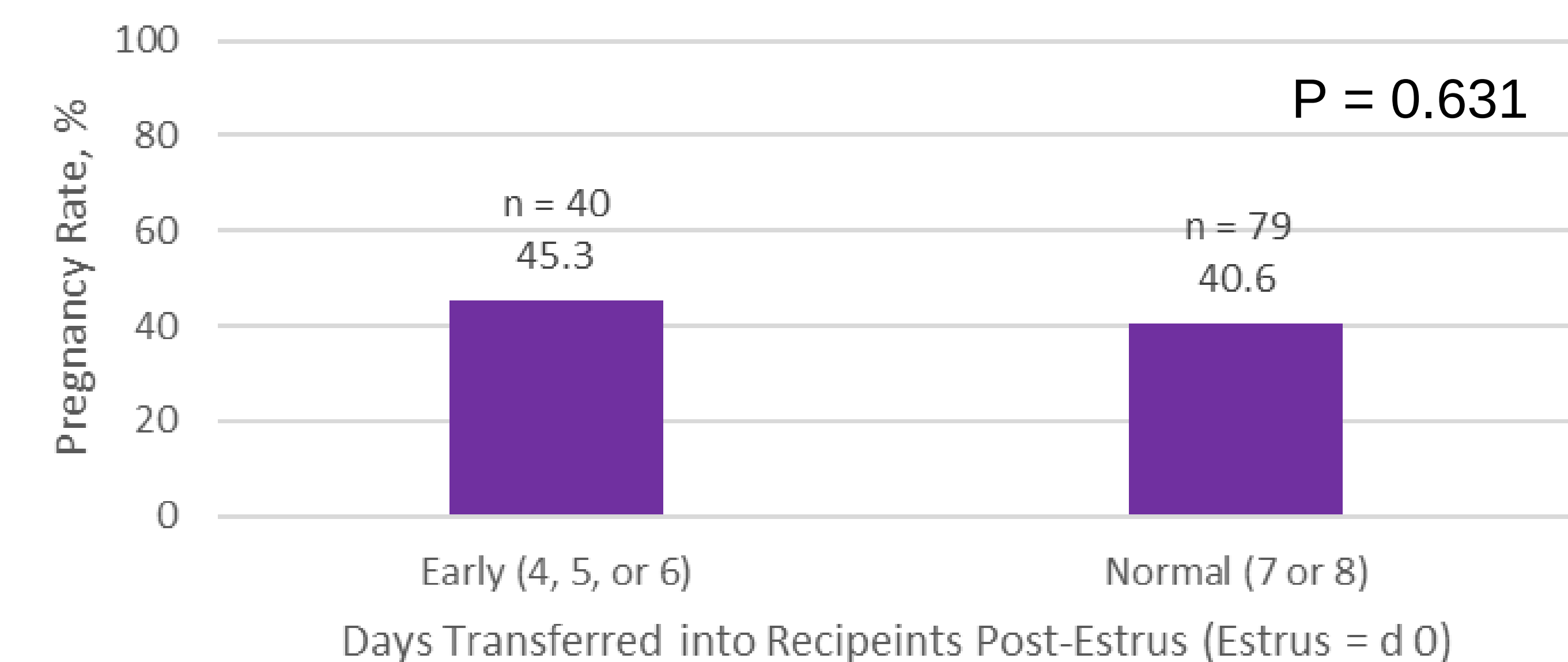
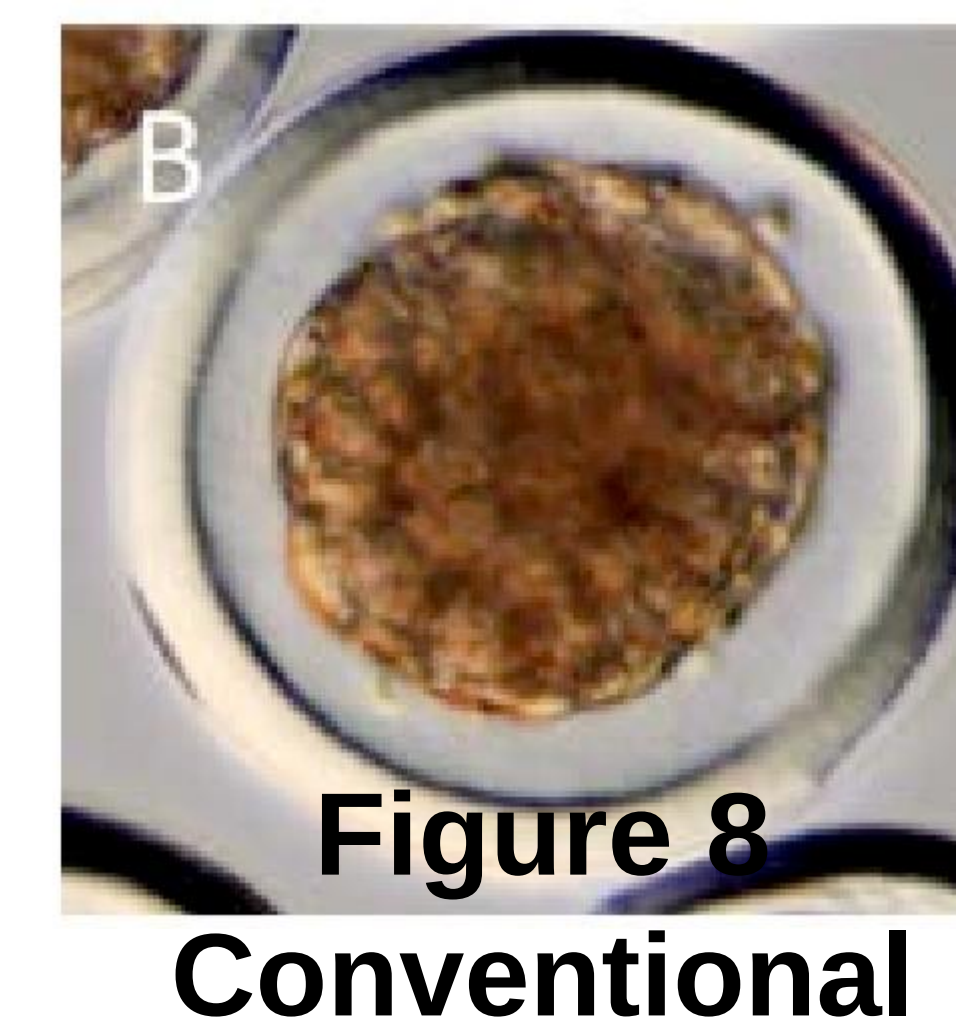
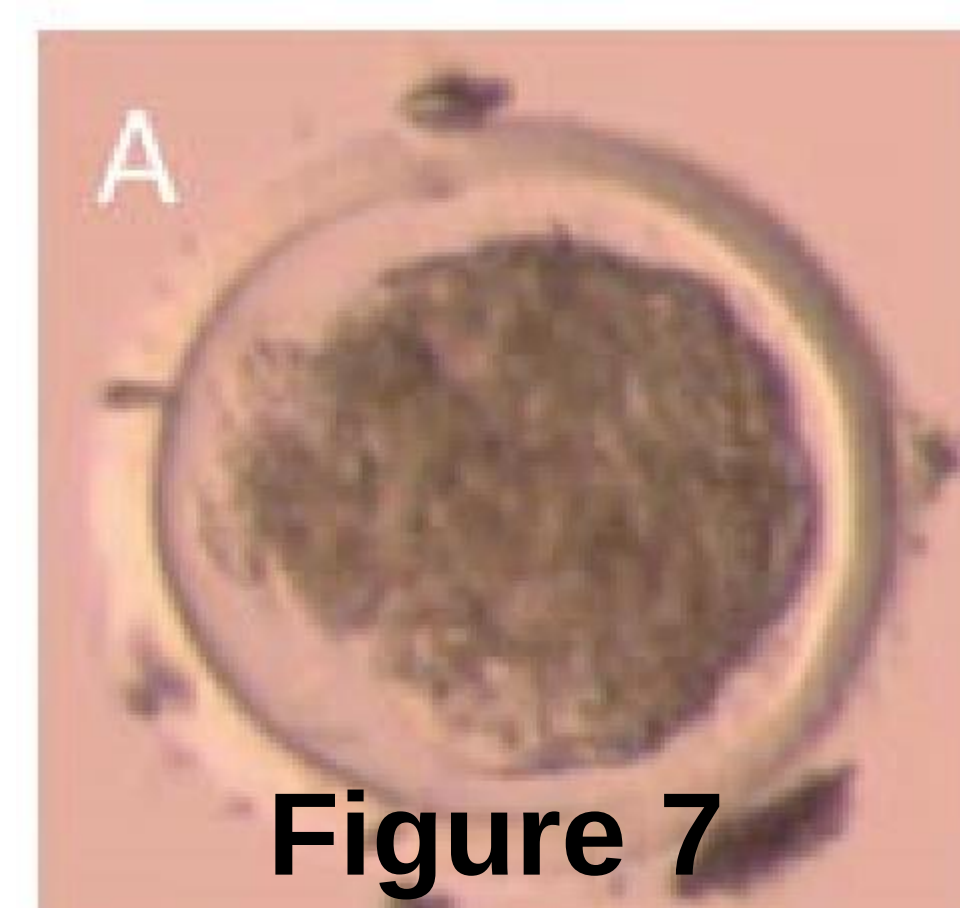
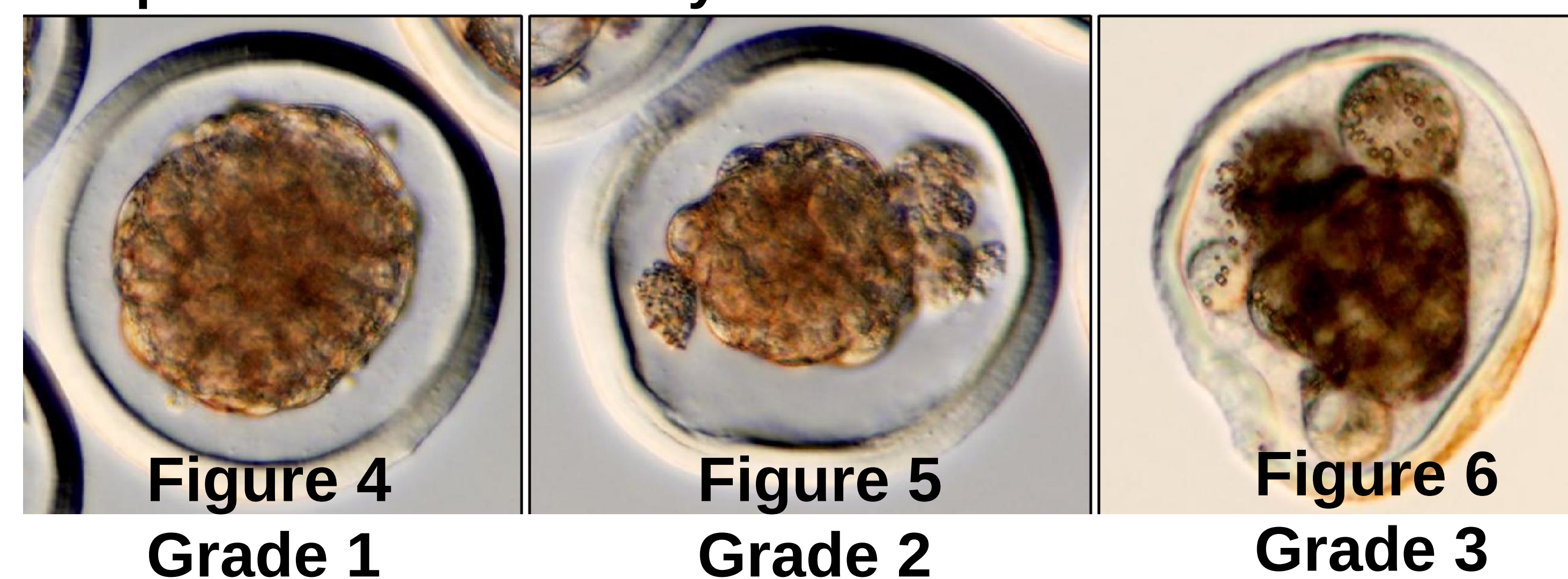


Figure 3. Bovine Embryo Stage & Grades

Stage of Development		Quality of Embryos	
Code	Stage	Code	Quality Description
1	Unfertilized	1	Excellent or good
2	Two Cell to Twelve Cell	2	Fair
3	Early Morula	3	Poor
4	Morula	4	Dead or Degenerating
5	Early Blastocyst		
6	Blastocyst		
7	Expanded Blastocyst		
8	Hatched Blastocyst		
9	Expanded Hatched Blastocyst		

Examples of Bovine Embryo Grades and Production Methods



Results

- No interaction between embryo production method and day of transfer post-estrus on pregnancy rates (P = 0.228)
- No effect of embryo production method on pregnancy rate (P = 0.764)
- No effect of day of transfer post-estrus on pregnancy rate (P = 0.631)

Conclusions

- Both embryo production methods and day of transfer post-estrus achieve similar pregnancy rates
- Analysis with additional data and reproduction factors such as age and number of parities of recipients would be beneficial to determine effects on pregnancy rates

Acknowledgements

- Embryos and Veterinary assistance from Donor Solutions; StockVets, LLC, Rensselaer, IN
- Recipient cows owned and housed at High Quality Farms, LLC, Decatur, MI
- Figures 4 to 8: A Consumer's Guide to Frozen Embryos; Dr. Stroud, 1995.