

## **Report on the Eighth International Symposium on Equine Reproduction**

I recently attended the Equine Reproduction Symposium in Fort Collins, Colorado. These meetings are held every 4 years and aim to bring together the scientists from around the world who work in equine reproduction. The meeting was attended by representatives from 20 countries and its small size encouraged maximum interaction.

The first 2 days of the meeting were devoted to the stallion, and the number of reports on methods of improving the viability of semen after freezing probably reflects the interest in this technique in the horse breeding industry. One of the limiting factors associated with the use of frozen semen is the costs involved in mare management since artificial insemination (AI) needs to be performed within 6 hours of ovulation. This requires a lot of examinations of the mare, and if AI is carried out too far in advance of ovulation, semen is wasted when a repeat AI is needed, further increasing costs. Therefore, of particular interest was a study looking at the fertility when AI was carried out after ovulation, where it was shown that conception rates remain high if AI is done within 6 hours of ovulation. While this study was performed using fresh semen, the results may well be applicable to the use of frozen semen, preventing the waste which can occur if a mare has to be bred more than once before ovulation occurs. The second study looked at timed AI after hormone treatment during heat. It was shown that if AI (with frozen/thawed semen) was performed at 20 and 40 hours after giving hCG (human chorionic gonadotrophin given at a specific stage of follicular development during heat to stimulate ovulation), pregnancy rates were the same as if AI was performed 6 hours after ovulation. The advantages of this timed breeding is that half the insemination dose was given at each time, so that semen costs were not increased, and mare management was much less intensive compared to AI within 6 hours of ovulation. These new observations will all contribute to making the use of frozen semen more acceptable and widespread.

To know how many mares can be bred to a stallion, a stud master needs to know how many motile spermatozoa the stallion produces daily. A study confirmed earlier findings that collection of semen needs be carried out daily for 6-7 days before a "baseline" is reached and the daily sperm production can be calculated.

Studies in the non pregnant mare covered a wide variety of topics. Interest continues in the breeding-induced endometritis, which is the inflammation of the lining of the uterus which occurs after breeding in mares. As a result of the irritation and inflammation, the uterus contracts to expel excess semen and other contaminants. In older mares who have had many foals, this reaction seems to be less efficient, so making these mares susceptible to uterine infection leading to infertility. Substances which stimulate the uterus to contract after breeding are now often given, and at the meeting it was shown that oxytocin (the hormone produced in response to sexual stimulation) gives the best results in terms of facilitating uterine clearance after breeding.

A number of studies investigated the effect of body condition on reproductive performance. It was shown that mares in good body condition have a larger maximum follicle diameter, a shorter interval from foaling to ovulation, and in non-lactating mares, a shorter interval between ovulations. If body condition is poor, mares cease cycling earlier in the autumn, and begin cycling later in the spring.

There continues to be a lot of research into techniques of embryo transfer, with reports on the success of freezing embryos still showing this is very difficult to achieve. A study from Brazil, where large numbers of embryo transfers are carried out, looked at the viability of embryos stored at 15-18°C for varying lengths of time (at intervals from 1-18 hours) to allow transfer of the embryos from studs to commercial farms where the recipients were held. All groups achieved a pregnancy rate of over 70%, which is extremely high, suggesting that embryo transfer might become more cost-effective in the future if individual farms do not need to run their own herds of recipient mares, but could use mares from a farm set up as a recipient base.

Finally, the last paper of the meeting showed that non-pregnant pony mares could be induced to produce milk with a treatment of one week and raise a foal to weaning. This may well be an option to hand raising an orphaned when no foster mare (who has lost her foal) is available. The only requirement mentioned was that all the mares had had at least one foal in earlier years.

I found the Symposium well worth attending, and it gave me the opportunity to keep up-to-date with the research being carried out around the world, and to present our own research. I am very grateful to The New Zealand Equine Research Foundation for their on-going support of my research, and for travel funds for this meeting.

Margaret J Evans  
Scientist, Endolab,  
Christchurch Hospital