



EFTBA Veterinary Newsletter



Bosh study: the 80% live foal rate is still disappointing when considering economic losses associated with failed production.

1 August 2010

- Bosh study on reproductive performance
- Commission decision on new protective EIA measures in Romania
- Glanders, Commission decision on Bahrain and Brazil

Welcome to EFTBA's veterinary newsletter

Welcome to the first edition of EFTBA's veterinary newsletter. The idea was championed by Dr Hanspeter Meier, Swiss delegate to EFTBA and a valued member of our Veterinary Advisory Team.

As an active breeder, of course I am interested in the latest research and veterinary advances relevant to my business and my horses but as other breeders know, this is a labour-intensive

job and we do not have time to spare to trawl through numerous veterinary journals.

This newsletter is intended to bring us up to date with developments relevant to our bottom line and our businesses and also the health of our horses. I have found this first edition interesting reading. I hope you do too.

Joseph Hernon

Chairman, EFTBA

Knowledge is power

In any field, knowledge is considered power, and progress only is possible if we think forward.

Breeding is a fascinating endeavour, among other reasons thanks to its comprehensive nature.

However, economy certainly is a basic and most important aspect, therefore the first newsletter is looking at research on reproductive performance from Kentucky (Bosh et al. 2009). The conclusion of this study was that well managed groups of mares can

achieve high levels of reproductive performance and all these figures may serve as basis for comparison with the results of our activities as breeders.

Dr Hanspeter Meier

EFTBA Delegate (Switzerland) and veterinary advisor

"Many thanks to Mrs. Eva-Maria Bucher-Haefner, Moyglare Stud Farm, for her valued sponsorship of this newsletter."



Profound Beauty (Danehill) owned and bred by Moyglare Stud. Continuing her success this year including the listed challenge stakes at Leopardstown



Dr Isabella Copar: veterinarian and EFTBA's Austrian Delegate with her 2010 colt 'Glorious Tristan' by Dreamwell

Recent EU developments:

Romania The Commission Decision on protective measures with regards to EIA in Romania was published in the Official Journal of the European Communities (OJEC) on the 18 June and is therefore now law.

Brazil and Bahrain Commission Decision of 14 June 2010 amending Decision 2004/211/EC As regards the entries for Bahrain and Brazil in the list of third countries and parts thereof from which the introduction into the European Union of live equidae and semen, ova and embryos of the equine species are authorized. *Because of new cases of Glanders reported in Bahrain and also in a new area of Brazil in April 2010 this decision extends the previous legislation regarding which areas are not permitted to export to EU.*

EU Veterinary Week A conference was held on Identification and Traceability as part of what is now an annual EU Veterinary week. The FEI President gave one of the speeches that highlighted the need to create a clear distinction between the sport horse as an equine athlete and livestock that is part of the food chain.

Research on reproductive performance from Kentucky (Bosh et al. 2009)

In order to be able to act sustainably and to further ones activities, breeders must consider economic aspects. According to Bosh et al. (2009), for the production of a foal, costs include amortisation of the mare, stallion fee, charges both prior to and during pregnancy and veterinary expertise. The latter includes management of the mare's reproductive cycle with the goal of achieving pregnancy with a single mating, allowing the stallion to mate successfully any mare.

Reproductive physiology determines these possibilities, and the objectives of this study were to assess reproductive efficiency and effectiveness among Thoroughbred mares in central Kentucky. The study examined: 1) pregnancy, pregnancy loss and live foal rates for different age groups and mares status categories; 2) impact of stallion book size on reproductive performance; and 3) influence of farm, mare age and status on the total interval length of the mating season.

Material, methods and results

A total of 1091 mares were mated on 1718 cycles in 2004, and complete information on all cycles mated and the foaling outcome was available for 1011 mares mated on 1559 cycles.

In this investigation of Bosh et al. (2009), mares were aged 2-24 years, median was 8 years (6-12 years).

The proportion of maiden, foaling and barren mares was 15.4, 70.3 and 14.2%, respectively (with differences in the proportion of mares by status among the farms).

The mean number of cycles a mare was mated during the season was 1.5. Overall, 36.4% of all mares were mated on more than one cycle during the season. The proportion of mares mated multiple times during a single oestrus was 5.1%.

Tab. 1 Proportion of all cycles mated by month

February	15.4%
March	26.9%
April	27.1%
May	22.5%
June	7.8%
July	0.3%

Of all cycles mated, 42.3% occurred by the end of March.

Among the farms, the proportion of all cycles mated by the end of March ranged from 20.9 - 67.8%

Per season and per cycle pregnancy rates on Days 15 and 40 post mating are shown in table 2.



Tab. 2 Per season and per cycle pregnancy rates

Pregnancy rate	15 days post mating	40 days post mating	Live foal rate season / cycle
Per season	92.1 %	89.3 %	78.3 %
Per cycle	64.0 %	58.3 %	50.8 %

Of mares pregnant on Day 40 post mating, 12.9% lost their pregnancies before foaling. A total of 20.6% of all pregnancies detected on Day 15 post mating were lost during the season. The majority of failed pregnancies (56.8%) were lost between Day 40 and foaling. There were no differences in pregnancy losses from Day 40 to foaling by age category, but there were differences in the Day 40 pregnancy rate per season, pregnancy losses Days 15-40, and live foal rate per season by mare status. As the total number of cycles the mare was mated in 2004 increased, live foal rate in 2005 decreased even after controlling for the influences of mare age and status. Whereas 82.3% of all mares mated on a single cycle in 2004 produced a live foal in 2005, only 50.0% of mares mated over 4 cycles in 2004 produced a live foal in 2005.

Influence of book size on reproductive performance

The examined mares by Bosh et al. (2009) were mated by a total of 159 stallions. Mean \pm s.d. book size of mares mated was 98.4 ± 40.6 and ranged from 5-199. There was no significant influence of stallion book size on per season day 15 pregnancy rates/cycle, or per season, per cycle live foal rates, or per season live foal rates. Per cycle day 15 pregnancy rates remained high even among mares mated to stallions with the largest book sizes. Overall mean total **interval length of the mating season** was 36.5 ± 26.1 days. As mare age increased, total interval length increased. Total interval length was longer for maiden mares compared to barren and foaling mares, therefore the percentage of mares with an interval length ≤ 25 days was higher reciprocally (table 3).

Tab. 3 Total Interval length ≤ 25 days per status of mares

Status of the mare	% interval length of ≤ 25 days
maiden	36.8 %
foaling	35.2 %
barren	56.9 %

Overall mean total interval length was 36.5 ± 26.1 days, and among the farms, the mean total interval length was from 26.4 to 45.0 days

Discussion

In principle, **efficiency over time** can be maintained if a mare becomes **pregnant within 25 days** from the start of the mating season or post foaling (Loy 1980). If the 25 day window (difference between normal gestation of ± 340 days and 365 days) is exceeded consistently, the mare foals later in each successive year, eventually having to forego a mating season.

Per cycle pregnancy rates from this (Bosh et al. 2009) and other studies suggest that slightly more than 60% of mares will be pregnant 15 days following any mating during the season. This rate is relatively low, considering the fertilisation rate on Day 2 has been estimated as 97% elsewhere. High levels of success have been achieved in effectively getting the mare in foal with pregnancy rates following the last mating of the season now greater than 90%.

The percentage of all **pregnancies lost** following day 15 pregnancy check was similar to results of other studies. Results suggest that about 20% of pregnancies confirmed on day 15 will be lost, largely contributing to reduced reproductive efficiency.

In this study of Bosh et al. (2009), 12.9% of the pregnancies recorded on day 40 were lost before or at foaling (including losses due to foals born dead and mares that died).

Among pregnancies lost in this study, 57% occurred between day 40 and foaling. This finding is more than reported by other authors. Sampling methods used in all studies may explain some of the variation in the results observed.

However, **live foal rates** both per season and per cycle were in close agreement with those of other researchers. Although the effectiveness of producing a live foal has improved over time, the 80% live foal rate is still disappointing when considering economic losses associated with failed production. Only about 50-60% of mares are expected to produce a live foal following a single mating during the season.

Mare age plays a significant role in establishing and maintaining the pregnancy. Mares aged >18 years have lowered success at all mating stages examined. Among mares aged 14-18 years, pregnancy losses appear to have the most profound impact on the decreased ability to produce a live foal. Pregnancy loss from days 15-40 was greater among foaling mares compared to maiden mares. This relationship may be confounded by mare age, as the median age is lower for maiden mares compared to foaling mares.

According to Bosh et al. (2009), **multiple matings** during the season indicate **fertility problems** with

the mare, stallion or both. Mares mated multiple times during the season were significantly less likely to produce a live foal, even after controlling for the influences of mare age and status on reproductive performance.

Multiple matings can profoundly impact a mare's fecundity over time. Even if a foal was produced, it would be late in the next season. The mare would have few opportunities to be mated during the following season, and the probability of producing a foal the subsequent year would be reduced. Multiple matings could be an indication for culling decisions.

The United States Jockey Club reported 37'025 live foals in North America during the 2005 foaling season, of which 14'141 were by Kentucky stallions. Live foal rates in North America and Kentucky were 57.8 and 69.2%, respectively, substantially lower than the 78.3% live foal rate for the 13 farms in the study of Bosh et al. (2009). The higher reported live foal rate among the 13 farms suggests they were superior in terms of reproductive performance compared to other farms.

Stallion fertility plays a significant role in reproductive performance of the mare. This study attempted to minimise the impact of an individual stallion's fertility on reproductive performance measures of the overall population by including mares mated to 159 stallions. Only 10 of these stallions mated ≥ 20 study mares.

The assessment of overall per cycle pregnancy rates on Day 15 by stallion book size percentile illustrates **fertility did not decrease** among stallions **with the largest book sizes**. However, among stallions with the same book sizes, variation in the individual stallion's fertility were apparent. Generally, there is careful selection of stallions mating large books of mares based on their fertility during previous mating seasons. However, many

stallions standing their first season have large book sizes.

The majority of mares in this study had a total interval length for the mating season of >25 days contributing to a loss of reproductive efficiency over mares' reproductive lives. The proportion of mares mated on one oestrus during the season was 64%, but **only 39% of mares** had a total **interval length of 25 days or less**. This suggests the prolonged interval length was not due to repeated mating attempts. The majority of mares in this study (70%) were foaling mares. It is difficult for foaling mares to achieve the 25 day window unless mated on foal heat or after short cycling. However, mare owners and veterinarians should carefully monitor foaling mares to weigh the benefits of mating on foal heat or short cycling on decreasing the effective length of the mating season.

Conclusion

This study showed that well managed groups of mares can achieve high levels of reproductive performance and all these figures may serve as basis for comparison with the results of our activities as breeders. At their outset, sound mares and a profound knowledge of the reproductive physiology of the horse are essential.

References

Bosh K.A., Powell D., Shelton B. and Zent W. (2009): Reproductive performance measures among Thoroughbred mares in central Kentucky, during the 2004 mating season; *Equine vet.J.* 41 (9) 883-888
Loy R.G. (1980): Characteristics of postpartum reproduction in mares; *Vet.Clin.N.Am.: Large Anim. Pract.* 2, 345-359

Readers are cautioned to seek advice of a qualified veterinarian before proceeding with any diagnosis, treatment or therapy.



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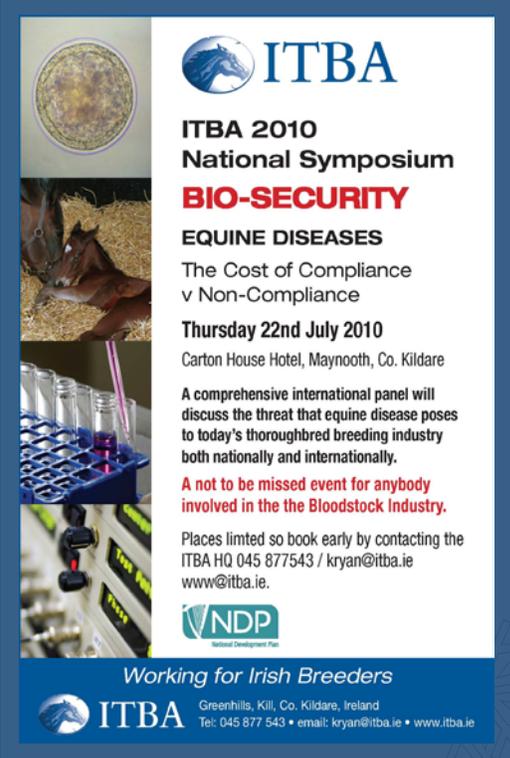
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Rathbary

Other new papers on the EFTBA website

Globalisation of Trade and the Spread of Infectious disease

The importance of worldwide equine trade is reviewed and the examples in which equine movements or trade in equine-derived products have resulted in the introduction of pathogens in previously disease-free areas are presented. General awareness regarding unusual clinical signs need to be promoted among veterinarians and horse owners as this is essential for early diagnosis and effective control and eradication.

Leadon D.P. & Herholz C.P. (2009.) Globalisation of trade and the spread of infectious disease. Equine Vet. Educ. Manual 8.(Eds. Mair & Hutchinson) 13-20.



The poster features a blue header with the ITBA logo (a horse head in a circle) and the text 'ITBA 2010 National Symposium BIO-SECURITY EQUINE DISEASES'. Below the header, there are three images: a globe, a horse's head, and a laboratory tray with test tubes. The text on the poster includes: 'The Cost of Compliance v Non-Compliance', 'Thursday 22nd July 2010', 'Carton House Hotel, Maynooth, Co. Kildare', 'A comprehensive international panel will discuss the threat that equine disease poses to today's thoroughbred breeding industry both nationally and internationally.', 'A not to be missed event for anybody involved in the the Bloodstock Industry.', 'Places limited so book early by contacting the ITBA HQ 045 877543 / kryan@itba.ie www@itba.ie.', and the NDP logo (National Development Plan). At the bottom, it says 'Working for Irish Breeders' with the ITBA logo and contact information: 'Greenhills, Kill, Co. Kildare, Ireland Tel: 045 877 543 • email: kryan@itba.ie • www.itba.ie'.



