EFTBA Veterinary Newsletter

Bosh study 2009b: conclusions stess the need for breeders to work out a valid business model and to emphasise quality

1 November 2010

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- *Report from the International Breeders' Meeting in Calgary*
- *Updates on sales companies & required tests*

Welcome to EFTBA's veterinary newsletter

Welcome to the second edition of EFTBA's veterinary newsletter.

Right in the middle of sales season we have also extended information to include some interesting developments in relation to pre-sales testing,

The covering season is approaching and again we emphasise to breeders the importance, and long term business advantages of adhering to the Codes of Practice.

I would also like to thank the Food and Veterinary Office based in Ireland which received an EFTBA delegation earlier this year, and have been extremely conscientious in increasing the testing for EIA in Romania.

Joseph Hernon

Chairman, EFTBA

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

Knowledge is power

With the newsletter No. 1, we looked at research on reproductive performance of mares in Kentucky (Bosh et al. 2009a). These findings are also the basis for investigating the impact of their reproductive efficiency over time and financial value on economic returns.

The economic model of this further study of Bosh et al. (2009b) delivers most interesting data firstly for the business-plan of any breeder, but also for promotional activities with e.g. incentive schemes which are based on the nomination of foals and yearlings.

However, before European readers find these results too depressing we must remember that this research is focused on a particular moment in time in the USA.

Dr Hanspeter Meier

EFTBA Delegate (Switzerland) and veterinary advisor

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

Impact of reproductive efficiency over time and mare financial value on economic returns (Bosh et al. 2009)

Introduction

Bosh et al. (2009b) state that there is no guarantee a mare will produce a live foal every year, al-though she is managed to maximise the likelihood of producing a live foal. This uncertainty is il-lustrated in the study examining **reproductive efficiency** among well-managed Thoroughbred farms, where **78,3% of mated mares produced a live foal** (Bosh et al. 2009a).

The **economic consequences** of reproductive efficiency have not been studied in Thoroughbred mares yet. The reason economic outcomes may not have been extensively explored here is because mare ownership is often undertaken for reasons other than profit. However, even those people not participating purely to profit financially, generally want to minimise financial losses.
The costs of producing a foal can be divided into:
1) daily maintenance cost of the mare;
2) mare replacement costs and insurance;
3) costs associated with mating activities (i.e. veterinary, transportation);
4) routine health and farrier work; and
5) nomination fee.

Combining all categories, Kirkpatrick (2001) calculated the cost to produce a foal at $ 29'632, but did not include the annualised replacement cost of the mare or costs associated with maintaining the foal until sold as a yearling. This figure also fails to account for the inability of the mare to pro-duce a foal every year.
Thalheimer and Lawrence (2001) estimated the cost of producing a foal up to its sale as a yearling at $ 85'142 which assumed 1.5 mares were required to produce a foal every year. In both cases, the nomination fee was less than $ 20'000. Of course, the cost varies greatly depending on the stud fee and annualised replacement cost of the mare.

The objectives of this study (Bosh et al. 2009b) were to:
1) assess mare productivity over time;
2) examine factors pertaining to the mare influencing the likelihood of producing a foal; and
3) to analyse economic consequences of differences in reproductive efficiency and mare financial value over different investment periods.

Impact of reproductive efficiency over time and mare financial value on economic returns

Materials and methods

Records of 1292 mares mated during the 2004 and/or 2005 breeding season in Kentucky were investigated by Bosh et al. (2009b). In total, production figures were available for 1176 mares mated over 7244 mare-years.

Costs of all treatments and procedures billed for veterinary care were obtained from a practice used to recruit farms (n = 23) to the study. Mean expected costs were calculated using a weigh-ted average of annual mating and maintenance expenses based on the proportion of mares ma-ted in each cycle during the 2004 season by mare status (tab. 1).

Tab. 1 Average expected mating and maintenance costs

mare status	mating & maintenance costs
maiden mares	$ 10'883
foaling mares	$ 11'480
barren mares	$ 11'009

Costs associated with the nomination fee and mare value were based on industry standards that the stud fee should range from one-fourth to one-third of the mare's value

For these scenarios, where mare financial value was assumed constant, the nomination fee of $ 30'000 was used, based on the median nomination fee among the cohort of mares mated during the 2004 and 2005 seasons. Mare financial value was assumed to be $ 120'000 (i.e. 4 times the nomination fee).

Results

Produce history
- Mare production history length (mean ± s.d.) was 6.2 ± 4.7 mating seasons.
- Number of years of production history was 1 – 22 years.
- Number of foals (mean ± s.d.) produced was 4.8 ± 3.6.
- Total number of foals produced by a mare over the reproductive life ranged from 0 – 19 foals.

Of 1176 mares, 440 (37.4%) produced foals in every year of their production history.
- Mean ± s.d. number of years of production histories for these mares was 2.9 ± 2.2 years.
- Total years of production history for this group of mares was 1 – 13 years.

The other 736 (62.6%) mares did not produce a registered foal in at least one mating season du-ring their reproductive lives.
- Here, mean ± s.d. total years of production history was 8.1 ± 4.7 years.
- Total years of production history was 1 – 22 years.

- Mean number of years these mares were mated before not producing a registered foal was 3.4 ± 2.5 years, range 1 – 16 years

There were 438 mares with at least 7 years of production history, 96 (21.9%) produced live foals continiously over the first 7 years of their production histories.

Drift in foaling dates

When mares foaled in consecutive years, the drift in the foaling date was 13.4 ± 23.2 days later in the subsequent year. Drift in foaling dates ranged from foaling 41 days earlier in the subsequent year to foaling 142 days later.

Tab. 2 Drift in foaling dates

Drift	number & % of mares
no drift (foaling on the same day or earlier)	n = 1106 / 31.1 %
drifting 1 - 30 days later	n = 1785 / 50.2 %
drifting >30 days later	n = 668 / 18.7 %

Factors influencing the probability of producing a foal:

- A foaling date before 1st April increased odds of producing a foal in the subsequent year.
- An increase in age of the mare decreased odds of producing a foal.
- An increase in number of cycles the mare was mated decreased odds of producing a foal.
- Number of foals produced in sequence did not influence odds of producing a foal.

Economic model results

Bosh et al. (2009b) developed a base scenario to examine the economic consequences of repro-ductive efficiency over a 7 year mating period (tab. 3). This scenario assumed a maiden mare was purchased for $ 120'000 at the end of year 0, and she was mated to a stallion with a $ 30'000 nomination fee. The annual expected cost for mating and mare maintenance was $ 10'883, based on average expected veterinary expenses. Additional weanling and yearling production costs were assumed to be $ 12'084 (Thalheimer and Lawrence 2001). Revenue gene-rated from selling the yearling was estimated using a 3.25 nomination fee multiple (i.e. $ 97'500). A sales commission cost of 9.5% ($ 9'262) was assumed at the yearling sale.

The mare was mated in all 7 years of the investment, and sold in foal for $ 36'000 in year 7 (tab. 4). The esti-mated sale price of the mare at the end of the period was based on the average sale price among mares 10-12 years of age sold in foal between $ 10'000 and $ 120'000 at the Keeneland sale in Kentucky in November 2001. This represents mares purchased at age 3, 4 and 5 years for $ 120'000 that depreciated in value after mating for 7 years before being sold while in foal. The average was rounded to 30% of the mare's purchase price. The final yearling produced was sold in year 8. It was assumed the mare was barren only once following mating in year 4. A 5% dis-count rate was used in calculating the net present value (NPV).

Tab. 3 Economic model / annual details

year	costs and revenues
0	Purchase price of the mare and daily board costs for 1.5 months.
1	Costs were associated with mating, mare maintenance and stud fee (if there is a gua-ranteed live foal agreement the fee is refunded if the mare does not produce a live foal).
2	Costs of production were slightly higher due to the addition of foaling and foal main-tenance costs.
3	Sale of the first yearling resulted in the first positive cash flow.
4	Revenue was generated from sale of the second yearling. Positive cash flow was slightly higher because fee cost was not incurred (mare was assumed barren).
5	Revenue was generated from sale of the third yearling.
6	Cash flow was negative because there was no yearling to sell.
7	Positive cash flow resulted from sale of the in-foal mare and her fourth yearling. Costs of mating, mare and foal maintenance, foaling and stud fee were still incurred.
8	Additional revenue was generated on year 8 due to the sale of the fifth yearling.

Table 3 shows the details of the economic model of this study. It is a possible example which principally may be useful for the business-plan of any breeder

Details of this economic model

- In this **base scenario** the net investment cash flow was $ 38'772, but the **investment did not break even until the final yearling was sold** in year 8.

- The maximum cash outlay before generating revenue was $ 212'484.
- The NPV was negative ($ 13'633) representing the discounted value of the mare's future year-ling sales over the investment period less the mare's purchase price. A negative NPV means the initial mare's purchase price was greater than the discounted value of the yearling sales.

- The IRR (internal rate of return) on the investment was 3.45%. It means the investment earned a rate of return of 3.45% which can be compared to the rate of return from other investments (such as a bank savings account, e.g.).

Tab. 4 Economic model / total costs and revenues

transactions	costs $	revenues $
Purchase of mare	120'000	
Nomination fee	210'000	
Annual cost mating and mare maintenance	65'000	
Weanling and yearling production costs	72'000	
Revenue yearling sale	54'000	490'000
Sales commission		
Sale of mare		36'000
Total	521'000	526'000

NB: The figures in table 4 are according to the situation in Kentucky a few years ago and most certainly are different from the practicabilities of most European breeders. However, the principles and relations may be useful for comparison and guidance.

Additional scenarios were developed to examine the economic consequences of reproductive efficiency over varying mating period lengths and different levels of success for the maiden mare purchased in year 0. They used the same assumptions of prices, costs, fees and rates as the base scenario presented above.

- The most profitable scenarios involved a mare that produced a foal in all 7 years mated before being sold (NPV = $ 16'982, IRR = 6.73%), and a mare mated for 9 years before being sold, who was only barren once 4 years into her production history (NPV = $ 17'472, IRR = 6.55%).

- The economic consequences of reproductive efficiency over a 7 year investment horizon by mare financial value were examined, assuming the mare was barren in year 4. The assumption of mating costs, mare and foal maintenance costs, weanling and yearling production costs, and discount rate were the same as the base scenario, but nomination fee, yearling sales price, purchase price of the mare, and mare's sale price varied depending upon the mare's value.

Greatest profitability was obtained among **highest valued mares**. Mares valued at $ 1'000'000 had a positive NPV of $ 639'710 and IRR was 13.01% over the 7 year investment horizon. Maxi-mum cash outlay before generating revenue was $ 1'623'176 for the $ 1'000'000 mare.
Mares valued $ 150'000 or higher, all produced a positive net cash flow. However, the IRR was low for mares valued $ 150'000 and $ 300'000. Mares valued at $ 100'000 or less were not profitable.

Discussion

Reproductive records and profitability
The estimation obtained from the Jockey Club records of a mare not producing a foal after 3 or 4 years of mating fits the **industry rule of thumb** that a **mare will be barren 2 out of every 7 years.**
In this study (Bosh et al. 2009b), scenarios examining a mare barren twice over a 7 years invest-ment horizon, **were not profitable**.

The high proportion (69%) of mares drifting in their foaling dates between successive foaling sea-sons represents an aera impacting productivity over time. Although drift in foaling dates can result from mating the mare multiple times during the season, drift can also result from delay in mating the mare post foaling.

This study indicated each of the following decreased the odds a mare would produce a foal:
- increasing age,
- foaling after 1st April, being mated at more than one cycle during the season, and
- a lower number of foals continuously produced in sequence during previous years (for example, among 2 mares of the same age, both foaling after 1st April and mated twice during the season, the probability of producing a live foal in the next year will be lower for the mare that previously produced 2 foals in sequence).

Similar results were obtained using the complete production history for all mares (except the number of cycles mated). Since reproductive efficiency is closely tied to profitability, these factors can be used to help modify management practices and determine culling strategies.

Veterinary management of mating costs comprise a small proportion of total annual production costs for the majority of mares (i.e. <1-5% for mares valued at $10'000 or higher), but **mating management can greatly affect reproductive efficiency**.
The results emphasise the importance of performing all necessary, evidence-based veterinary treatments to improve reproductive efficiency and ensure a high standard of the mare's health and welfare. However, the conclusions do not hold among mares of lower financial value, as veterinary management of mating costs represent a larger proportion of total production costs.

Multiple matings

Although important to minimise the number of times the mare is mated during the season to maximise efficiency over time, in terms of recovery of the investment, it may be necessary to mate the mare on several cycles to produce a live foal. The small increase in additional costs associated with mating the mare during multiple cycles is generally heavily outweighed by future sales revenue of the offspring.

Multiple matings during the season increase drift in the foaling date, which can affect the mare's productivity over time. Management should examine the reason mares were mated multiple times, as profitability over time is related to the consistent production of foals under the assum-ption of this study (Bosh et al. 2009b).

Mare value and profitability

The scenario for a maiden mare, valued at $ 120'000, showed the highest profitability among mares that consistently produced live foals over a 7 year period. Profitability was also improved by extending the holding period over the traditional 7 year investment, assuming the mare conti-nues to produce live foals consistently.

It was not profitable to invest in the mare for a short period and sell the mare before she was barren, although this conclusion may vary with individual mare qualities and successful racing performance of offspring.

Profitability was highest among mares of greatest financial value under the assumptions of the study of Bosh et al. (2009b). However, the high initial cash outlay excludes many potential inves-tors.

Mares of lower financial value (i.e. $ 100'000 or less) were not profitable over a 7 year period, as-suming mares were barren once in year 4.

However, profitability among mares of lower financial value could be attained by:

1) selling yearlings above the market average nomination fee multiplies used in the scenario;

2) holding the mare longer than the traditional 7 year investment period, assuming consistent re-productive efficiency is maintained; or

3) decreasing mating and maintenance costs.

Conclusions

The conclusions of Bosh et al. (2009b) are based on a large number of assumptions and are aimed only as a starting point into the interesting, but complex area of relating mare reproductive efficiency and management strategies to economic outcomes.

The authors advice that more work is needed to test the robustness of the conclusions of this study when the cost and revenue as-sumptions are varied.

Although the figures reflect the situation in economically favourable times in Kentucky, the model per se should be helpful for European breeders too. It is in accordance with empiric findings and stresses the same issues as the "Rules for Entering the Horse Business" by Lohmann and Kirkpatrick (1984) which have been written down in other troubled times.

Among other hints, they ask for working out a plan for your investment and the need to emphasize quality.

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

Report of the Veterinary Committee Meeting at the International Breeder's Meeting in Calgary, Canada, Monday 12 July 2010.

EQUINE INFECTIOUS DISEASE REPORTS
Veterinary reports were sought prior to the meeting. Reports were received from 17 countries spanning the five Continents. There are considerable differences between these countries in both their general horse populations and their thoroughbred populations. Diseases considered exotic in some are endogenous in others, or in regions of others. Reports submitted to the IBM varied considerably in extent and content.

However, despite these difficulties, the reports showed many striking features, that include; the importance of Romania in the EU context, ongoing problems with Herpes virus abortion across the world, Hendra virus fatalities in Australia, the increasing emergence of Atypical Myoglobinuria in Europe and in the USA Piroplasmosis and CEM.

Reports were sought by Continent – for North America, Canada reported on Strangles and Rabies, the USA on CEM, Piroplasmosis and Encephalosis. South American contributions were provided by Argentina on EIA and EVA, as tabled in the written report by Brazil, from Chile on Herpes Virus Abortion and from Colombia on Influenza and CEM. Africa was represented by South Africa where Herpes Virus Abortions, Strangles and African Horse Sickness were the major issues. Australasia and the Pacific Rim countries' concerns included Strangles and Hendra Virus in Australia, and in Japan, in addition to the tabled report, Herpes Virus Abortion and the debate on efficacy of vaccination were issues. Korea had no cases of diseases notifiable to the OIE.

New Zealand reported a single, non-thoroughbred EVA shedder and as above, referred to problems of enforcing reporting of disease. For Europe, France reported EIA and deaths resulting from welfare problems on a stud in Normandy. Germany, in addition to the tabled report also had cases of Herpes Virus Abortion and in the non-Thoroughbred, EIA in Southern Germany. Italy had problems with *R.equi* and Rotavirus in addition to EVA, EIA, West Nile Fever and Rabies.

The 2009 Piroplasmosis outbreak in Ireland was discussed, while Switzerland described recent insect vector research, Atypical Myo-globinurea and again had experienced problems with disease reporting. The UK had a relatively uneventful period, with the exception of EIA and CEM in imported non-Thoroughbreds, which highlighted the importance of the Code of Practice.

REPORTS FROM DISEASE REPORTING AGENCIES Disease reporting systems include the OIE, the ICC and RESPE. Each is different. They are all important and reports were tabled from the ICC and RESPE systems. The problems inherent in persuading horse owners and veterinarians to report non-notifiable diseases were discussed.

FVO AND EFTBA IN EUROPE
The recent visit of a delegation from the European Federation of Thoroughbred Breeders Associations (EFTBA) to the Headquarters of the European Union's Food and Veterinary Office (FVO) has led to reassurances that problems resulting from horse exports from Romania were being addressed through mandatory quarantine and testing protocols for all horses destined for export from Romania, and for any onward shipments from other countries for horses of Romanian origin.

NOVEL APPROACHES AND GLOBAL OVERVIEW
The importance of climate change and changes in insect vectors, which with globalization are posing new threats to the industry were discussed at length. The phrase "we have never seen anything like this before" was a recurrent theme and an important reminder of the need for open minds and great vigilance.
The Committee was of the view that disease control rests in the care of National Authorities and in that of the industry itself (e.g. The Code of Practice).

NEW VACCINES
Work on new vaccines including Clostridia, Strangles, African Horse Sickness, Hendra virus, Rotavirus and *Rhodococcus equi* was debated.

AOB
The agenda also included discussion on welfare issues. There was a wide spectrum of attitudes to welfare concerns ranging from only passing interest to a recognition in some countries that this can be one of the industry's major problems. The subsequent six equine fatalities at the Calgary stampede were an unfortunate and salutary reminder to all of the increasing importance of welfare and our interface with the media and the public.
Future calls for veterinary reports from IBM member countries will take a more standardized format which will include estimates of national horse population, national thoroughbred population, OIE notifiable disease outbreaks and non-notifiable disease outbreaks.
Signed
D.P.Leadon MA, MVB, MSc, FRCVS, DipECEIM,
CHAIRMAN – IBM VETERINARY COMMITTEE

Disease Reports

Recent disease outbreaks of EIA, Glanders, and West Nile Fever have been reported.

The International Collating Centre (ICC) and RESPE are both excellent sources of information on disease outbreaks.

http://www.aht.org.uk/icc/linksicc.html
http://www.**respe**.net

Codes of Practice

As we are looking forward to the covering season, readers are reminded of the advantages of following the Codes of Practice. Vaccination and testing well in advance of the season are actions on any breeders' 'to do' list.

www.**hblb**.org.uk
www.**syndicatdeseleveurs**.fr *(protocol de monte)*

Sales Requirements

In the UK, Tattersalls are requesting EHV1 for all mares at the December sales. EFTBA believes this is a positive approach. An EHV1 non or incorrectly vaccinated mare will be announced at the rostrum.

In Ireland, Goffs have also applied mandatory EHV vaccination of all pregnant mares offered at their breeding stock sales.

EU News – BEVA Equine Transport Forum

EFTBA is to send a veterinary representative speaker to the Equine Transport Forum in Brussels on the 29th November, which has been organised by BEVA (the British vets association) in association with FEEVA (European vets assoc). Des Leadon of the Irish Equine Centre, who is also an EFTBA veterinary advisor, will represent European Breeders. Our position is to retain the flexibility in transport arrangements currently given to registered horses, while fully supporting measures to improve the transport of horses for slaughter.

European Commission publishes results of consultation into new Animal Health Strategy

EFTBA veterinary advisory Committee spent a considerable amount of time replying in full to this consultation and we are pleased that many of our points were fully taken into account and published in the European Commission document which outlined the main results of the Consultation.

"Specific needs of the horse sector should be taken into account. Extent of horse movements is huge compared to exotic pets and zoo animals. All horses shouldn't be treated the same (wild ponies, slaughter horses, competition horses), they have hugely varied health status and disease risks"

"- Specificity has to be recognised especially for equidae, where an existing system complying with the international standards for registered horses is already in place. More emphasis should be given to its implementation.

"– EU animal health policy is unclear about the status of the horses and doesn't reflect commercial, racing, breeding, sporting and leisure movements of horses."

"– Distinction between breeding and registered horses is not needed; only slaughter horses need a different approach.

– Provisions of directive 90/426/EEC to be included into the bilateral trade or veterinary agreements, which would reduce day-to day practical problems and costs, facilitate exchanges and allow flexibility."

European Federation of Thoroughbred Breeders Associations

257 Avenue le Jour se Lève

92655 Boulogne CEDEX

France

Phone:

+33 4 71 58 49 17

Fax:

+33 4 71 58 41 15

E-Mail:

info@eftba.eu

Web Site:

www.eftba.eu

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This is a good example of how EFTBA is able to work on behalf of all thoroughbred breeders throughout the EU to make sure that their needs are reflected from the very beginning in forming new EU laws or updating old ones.

EFTBA thanks its veterinary advisors who give their considerable expertise for free to enable EFTBA to formulate coordinated policies at EU level in support of the industry: Dr Hanspeter Meier, Dr Des Leadon, Dr Roland Devolz, Dr Richard Greenwood, and also the valued time and input of Tim Richardson, the Veterinary Committee Chairman.

Future Events

23 November – EFTBA Autumn meeting and Veterinary Update, Newmarket

29 November – Equine Transport Conference in Brussels

19 to 20 May 2011 - **Veterinary Week 2011 -** The forth EU Veterinary Week , Brussels