Farm characteristics to improve insemination strategies in pigs

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Introduction

Reproduction efficiency is varying between farms

Reproduction results like litter size are affected by many physiological processes:

- ovulation
- fertilisation
- embryonic survival
- foetal survival
- etc.

Fertilisation is the starting point of reproduction efficiency

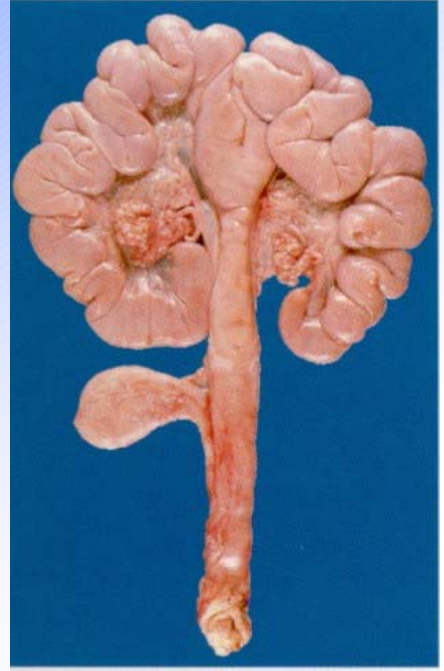
Introduction

- Fertilisation is influenced by timing of insemination
- At this moment insemination extension is based on general knowledge

Goal:

Show how insemination strategy can be improved on farm based characteristics

Fertilisation

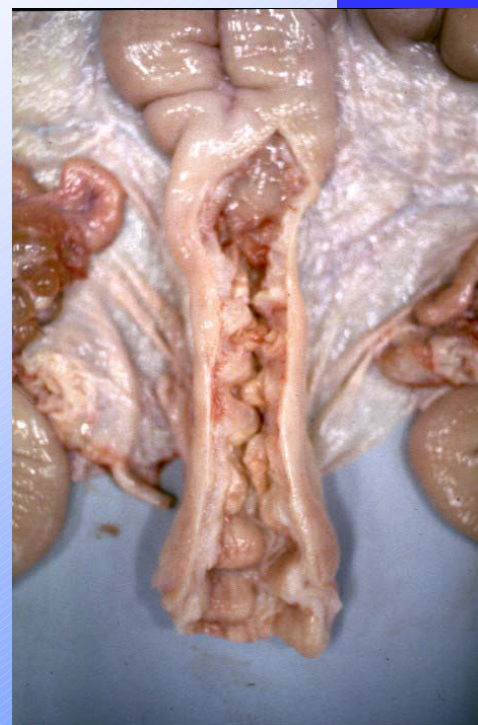


Male facts:

- Management of production of semen for AI (Number of sperm cells, quality of sperm cells
- Timing of insemination

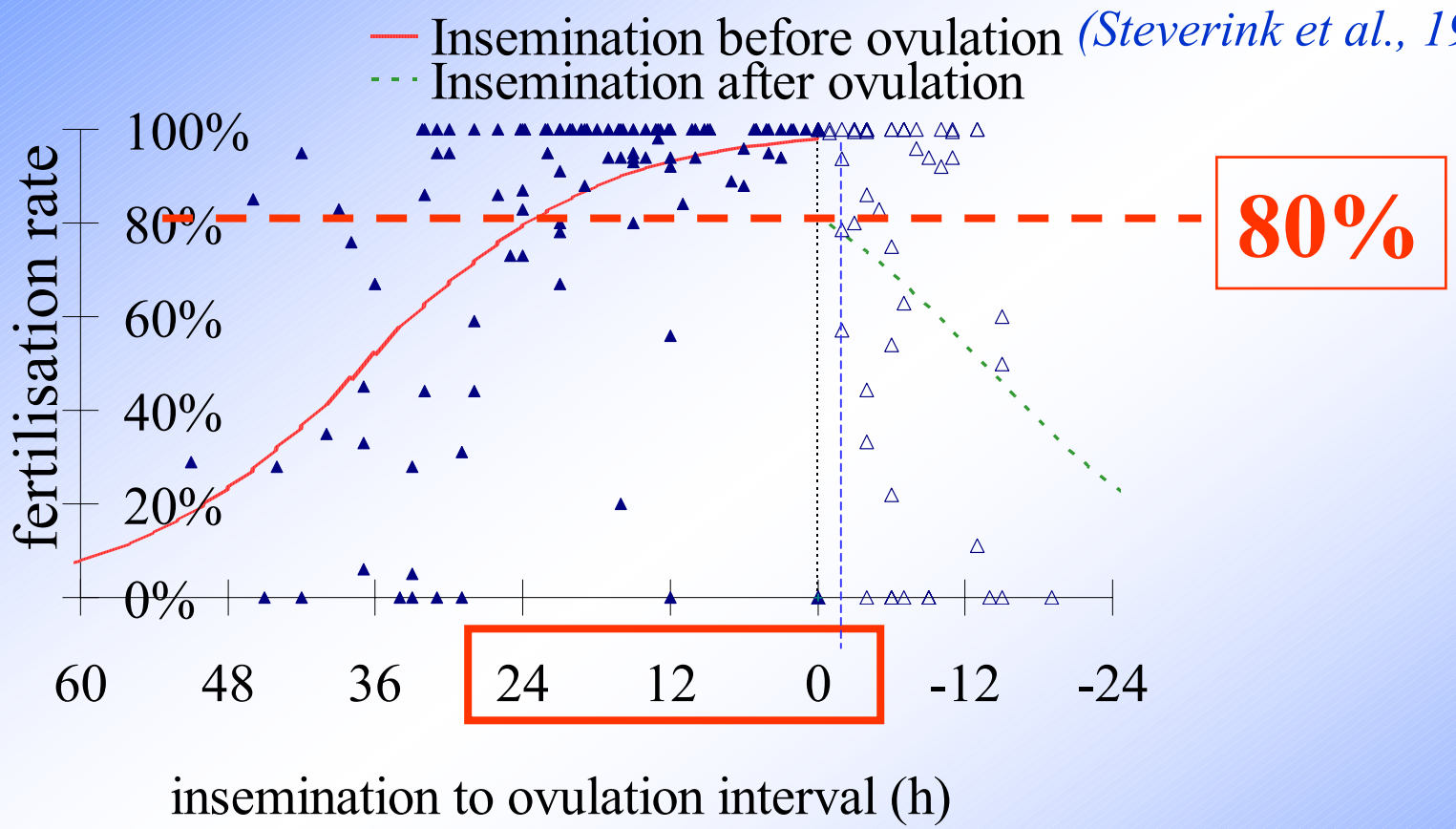
Female facts:

- Uterus environment
- Quality of the oestrus
- Moment of ovulation



Optimal insemination

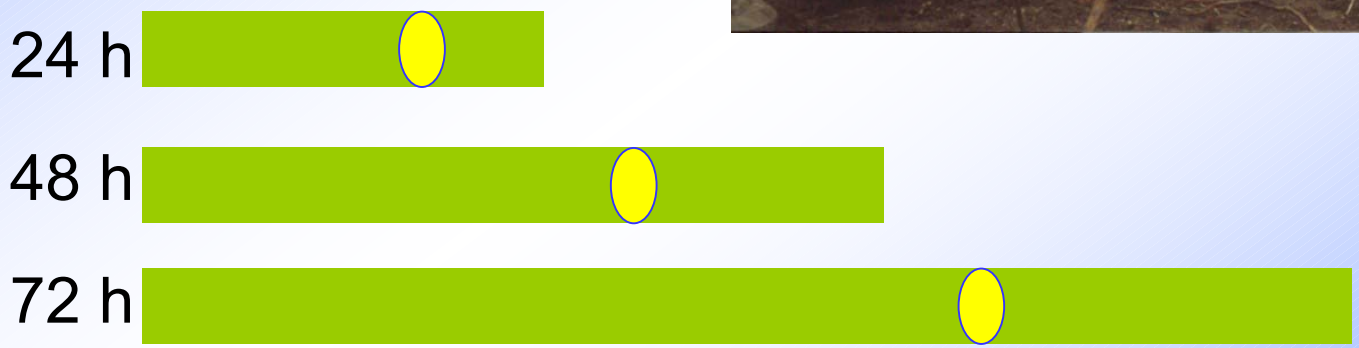
(Soede et al., 1995)
(Steverink et al., 1997)



Optimal fertilisation when insemination takes place between 0 and 24 h ***before*** ovulation

Ovulation

Is ovulation predictable?

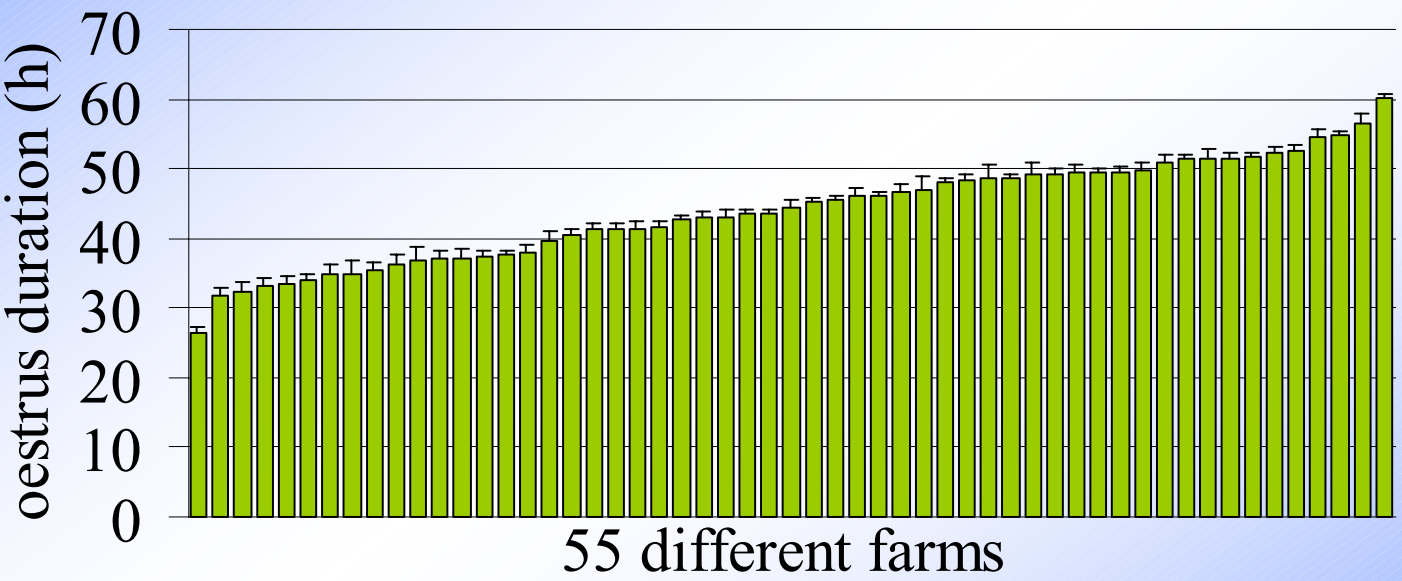


Ovulation takes place at 70% of the oestrus duration

Oestrus duration

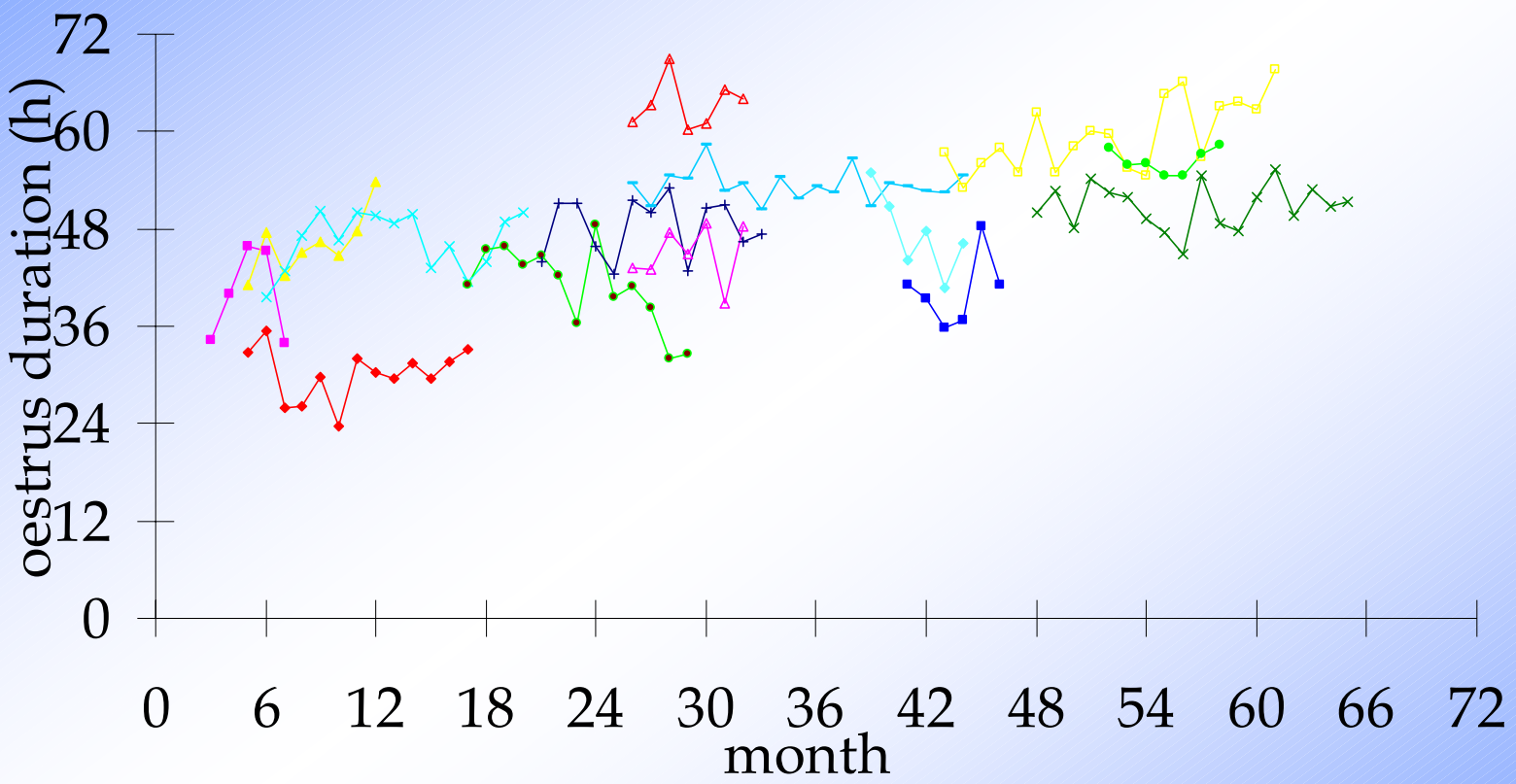
(Steverink et al., 1999)

What do we know about oestrus duration?



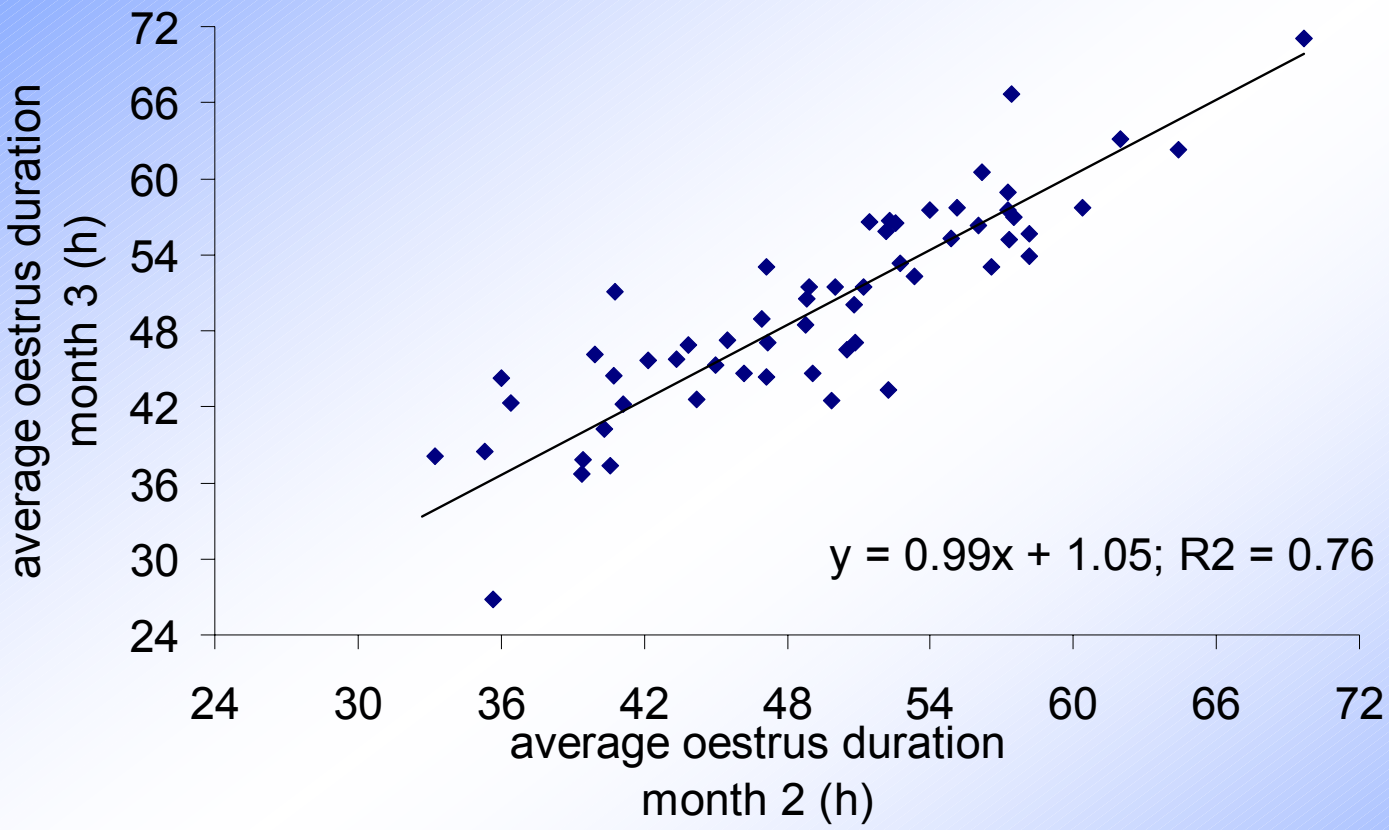
Significant differences in average oestrus duration between farms

Oestrus duration



Oestrus duration similar from month to month

Oestrus duration



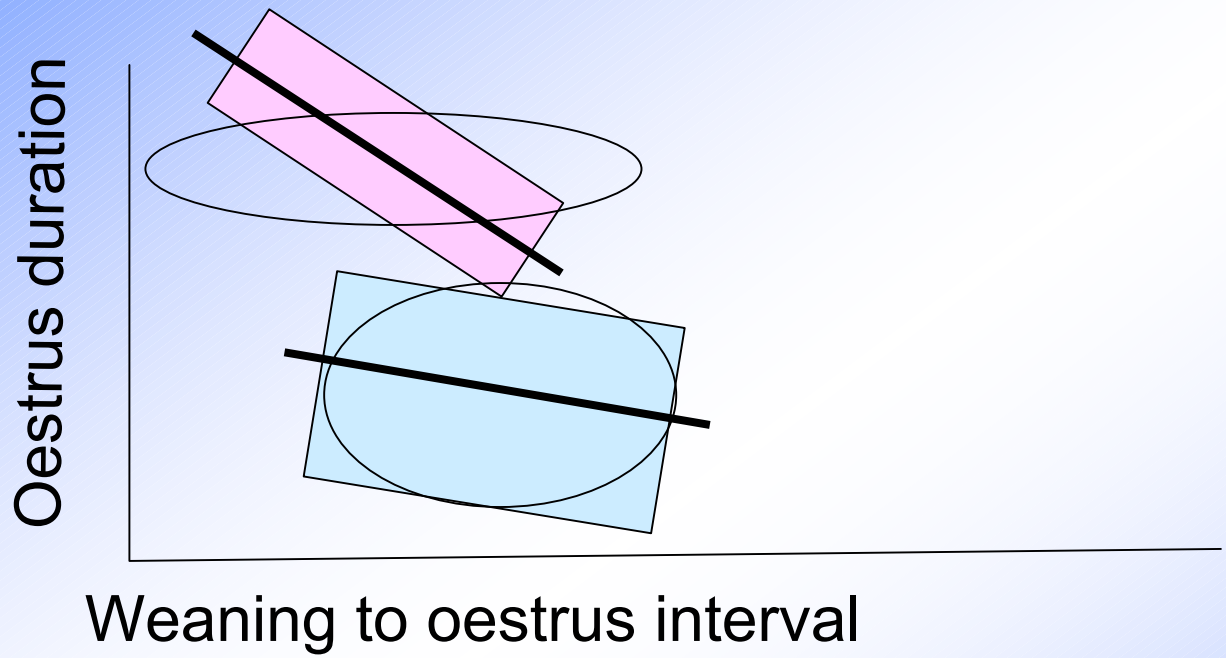
Repeatability of the monthly oestrus duration:
r^2 = 76%

Conclusion

1. Fertilisation is optimal when insemination takes place between 24 and 0 before ovulation
2. Ovulation takes place at two thirds during oestrus.
3. Oestrus duration (weaning oestrus interval) is highly repeatable

Insemination strategies can be adapted to the specific characteristics at the farm by collecting data on oestrus duration

Example of 2 farms



- long oestrus duration
- negative relation OD and WOI
- low variation

- short oestrus duration
- no relation OD and WOI
- high variation

PIGSIS

With this information a management program has been developed:

- Evaluation of the insemination strategy.
- Collect data of the onset *and end* of oestrus
- PIGSIS will predict the ovulation moment
- PIGSIS will give the predicted insemination timing.

10 to 20 figures to illustrate the proposed insemination strategy of the individual farm

PIGSIS

Werklijst PIGSIS

Groepsgegevens

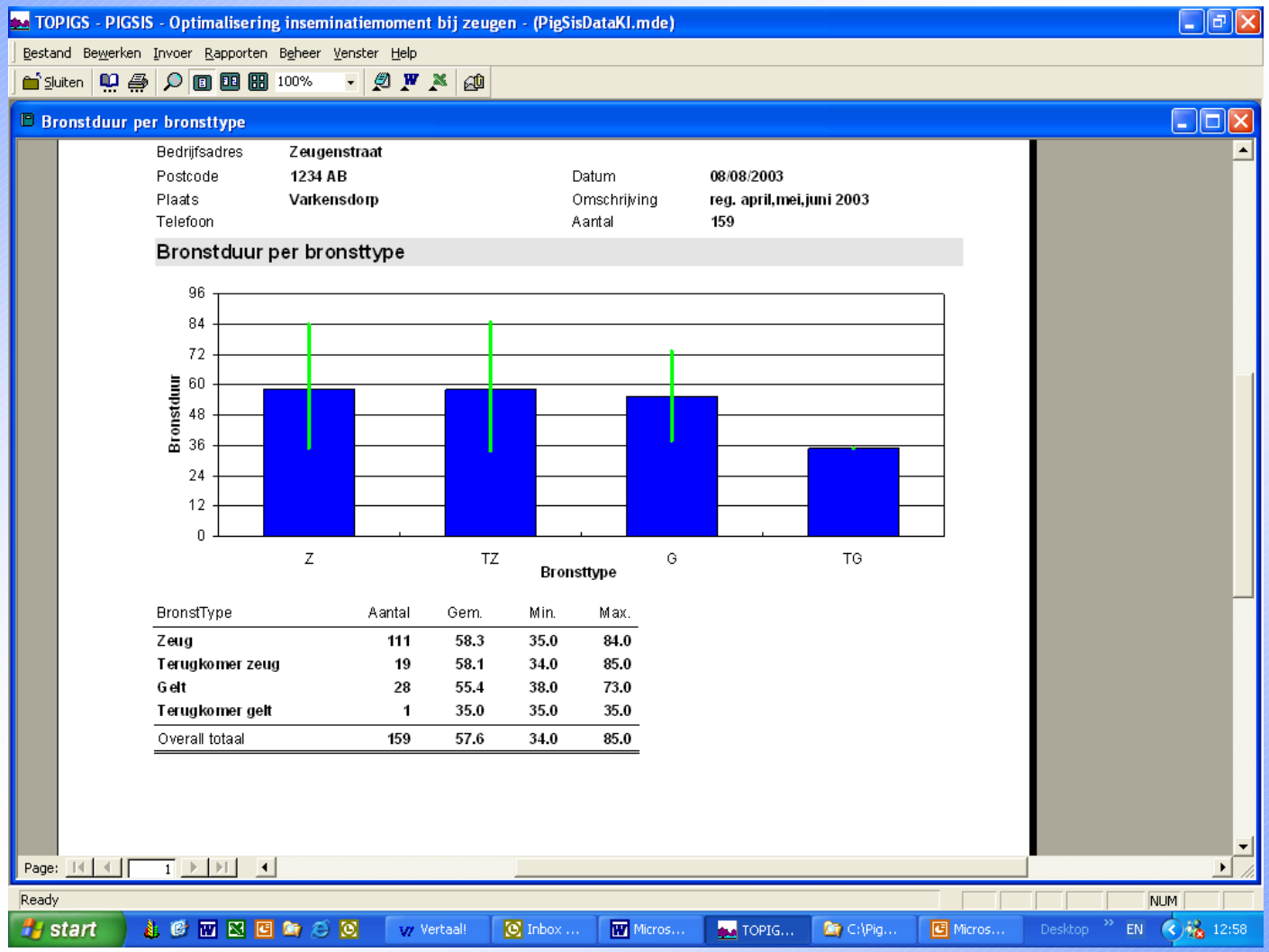
Bedrijfsnaam .....
Adres .....
Postcode&Plaats .....
Vaste dag en tijdstip spenen:

Telefoon .....
Fax .....
E-mail .....

Datum .....
Omschrijving .....

DIERINFO		SPEENINFO			BERIG BEER				BERIG MAN				DEKINFO						
Diernummer	Pariteit	Speendatum	Tijdstip	Terugkomer gelt (TG) zeug (TZ)	Datum begin berig beer	Tijdstip	Datum eind berig beer	Tijdstip	Datum begin berig man	Tijdstip	Datum eind berig man	Tijdstip	Datum 1e inseminatie	Tijdstip	Datum 2e inseminatie	Tijdstip	Datum 3e inseminatie	Tijdstip	Opmerking

PIGSIS average oestrus duration



PIGSIS

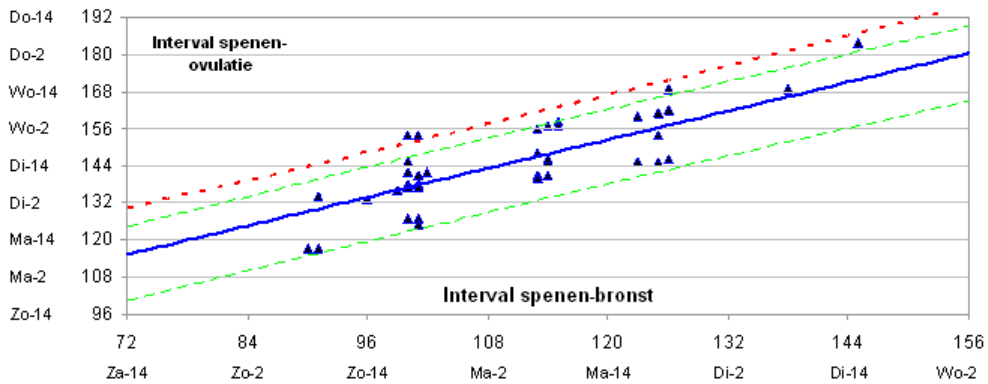
TOPIGS - PIGSIS - Optimalisering inseminatiemoment bij zeugen - (PigSisDataKI.mde)

Bestand Bewerken Invoer Rapporten Beheer Venster Help

Sluiten 100%

Inseminatieadvies

Interval spenen - bronst -> 3 t/m 6.5 dgn. Aantal in grafiek **106**



Inseminatieadvies : (bij spenen - bronst 72-156 uur)

- blauwe lijn (_____) is verwacht ovulatiemoment

- groene lijn (__ __ __ __) is advies 1e inseminatie en evt.navolgende inseminaties

- rode lijn (_ _ _ _ _ _ _) is advies laatste inseminatie

(2e en navolgende inseminaties niet uitvoeren na einde bronst)

Begin bronst voor zeugen	Inseminatieadvies : *)					
	1e ins.	2e ins.	3e ins.	4e ins.	5e ins.	Laatste ins.
Za-8	Zo-12	Ma-12				Ma-18
Za-18	Zo-20(Zo-21)	Ma-20(Ma-21)				Ma-20(Di-3)
Zo-8	Ma-9	Di-9				Di-14
Zo-18	Ma-17	Di-17				Di-20(Di-21)
Ma-8	Ma-20(Di-3)	Di-20(Wo-3)				Wo-8
Ma-18	Di-11	Wo-11				Wo-16
Di-8	Di-20(Di-22)	Wo-20(Wo-22)				Wo-20(Do-3)
Di-18	Di-20(Wo-5)	Wo-20(Do-5)				Do-11

*) 2e en navolgende inseminatie niet uitvoeren na einde bronst

Page: 1

Ready NUM

PIGSIS

- Some fertility problems can be related to insemination strategy
- PIGSIS can help to evaluate the used insemination strategy
- PIGSIS can simulate the best insemination strategy based on farm characteristics

Why didn't nature make a visible alarm clock at ovulation!!