# Vytvoření základu pro reprodukční program

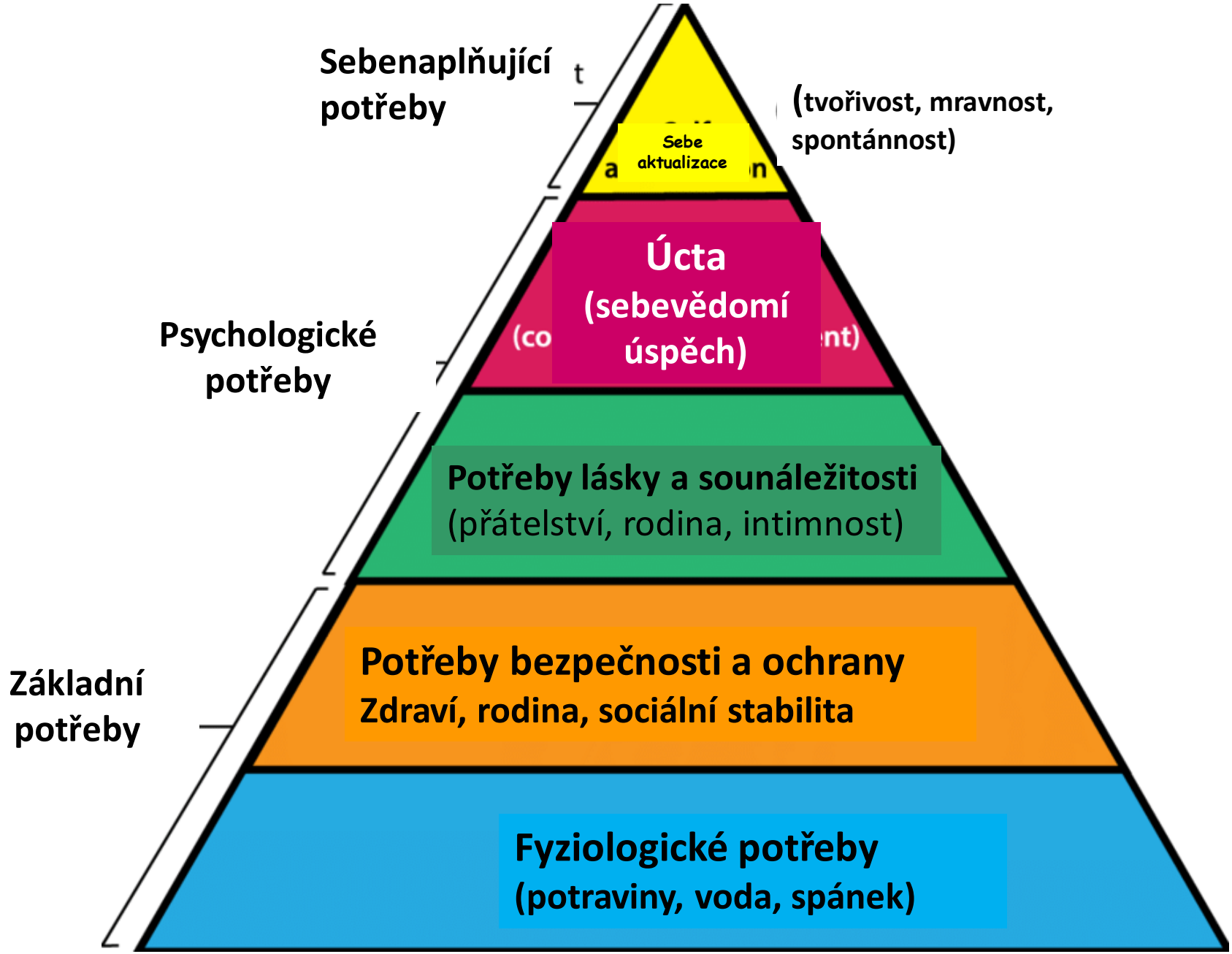

## Paul M. Fricke, Ph.D.

**Professor of Dairy Science**

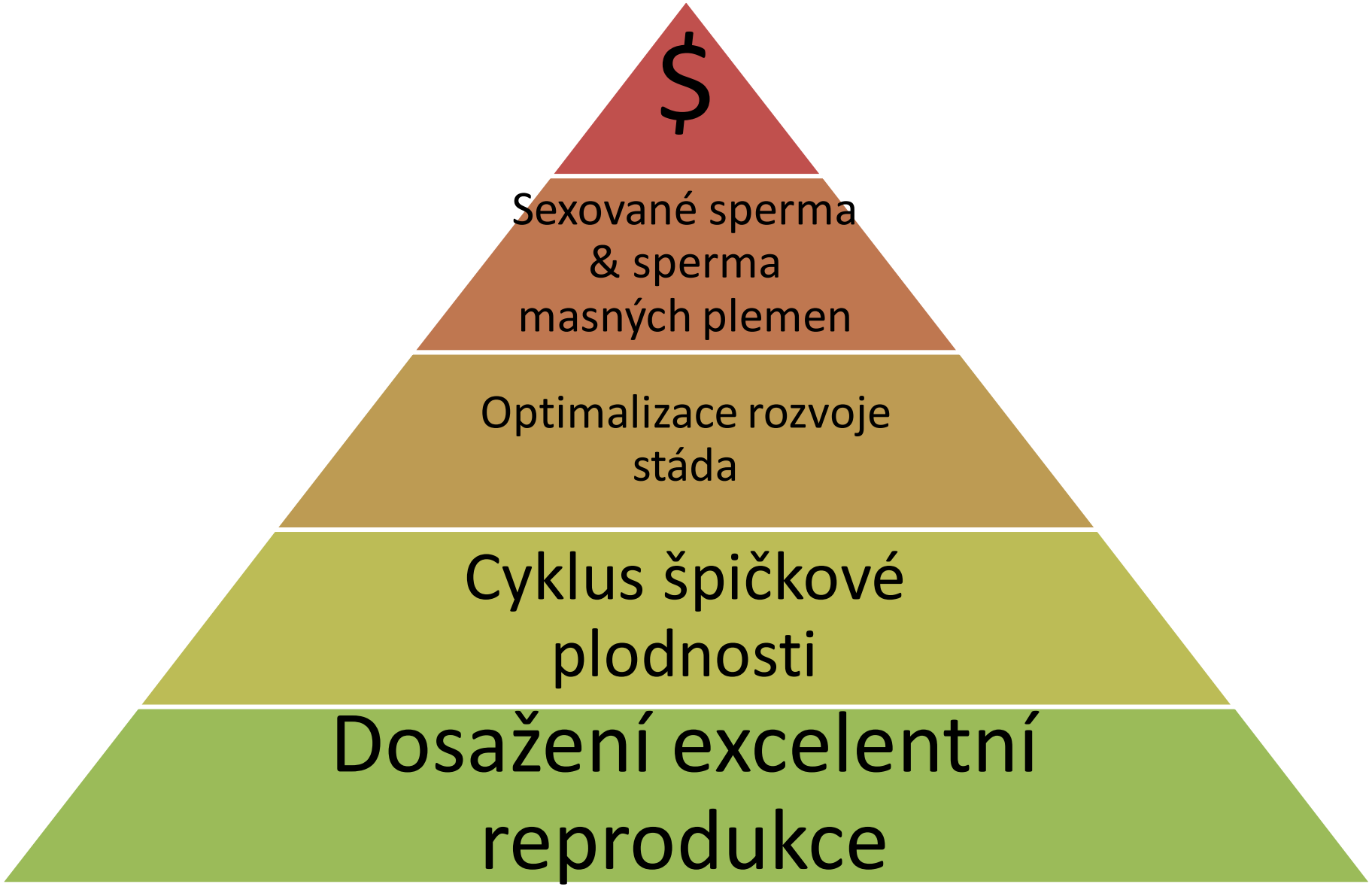
Department of Animal & Dairy Sciences
UNIVERSITY OF WISCONSIN-MADISON

Extension
UNIVERSITY OF WISCONSIN-MADISON

# Maslovova hierarchie potřeb



# Hierarchie reprodukčních potřeb dle Dr. Frickeho

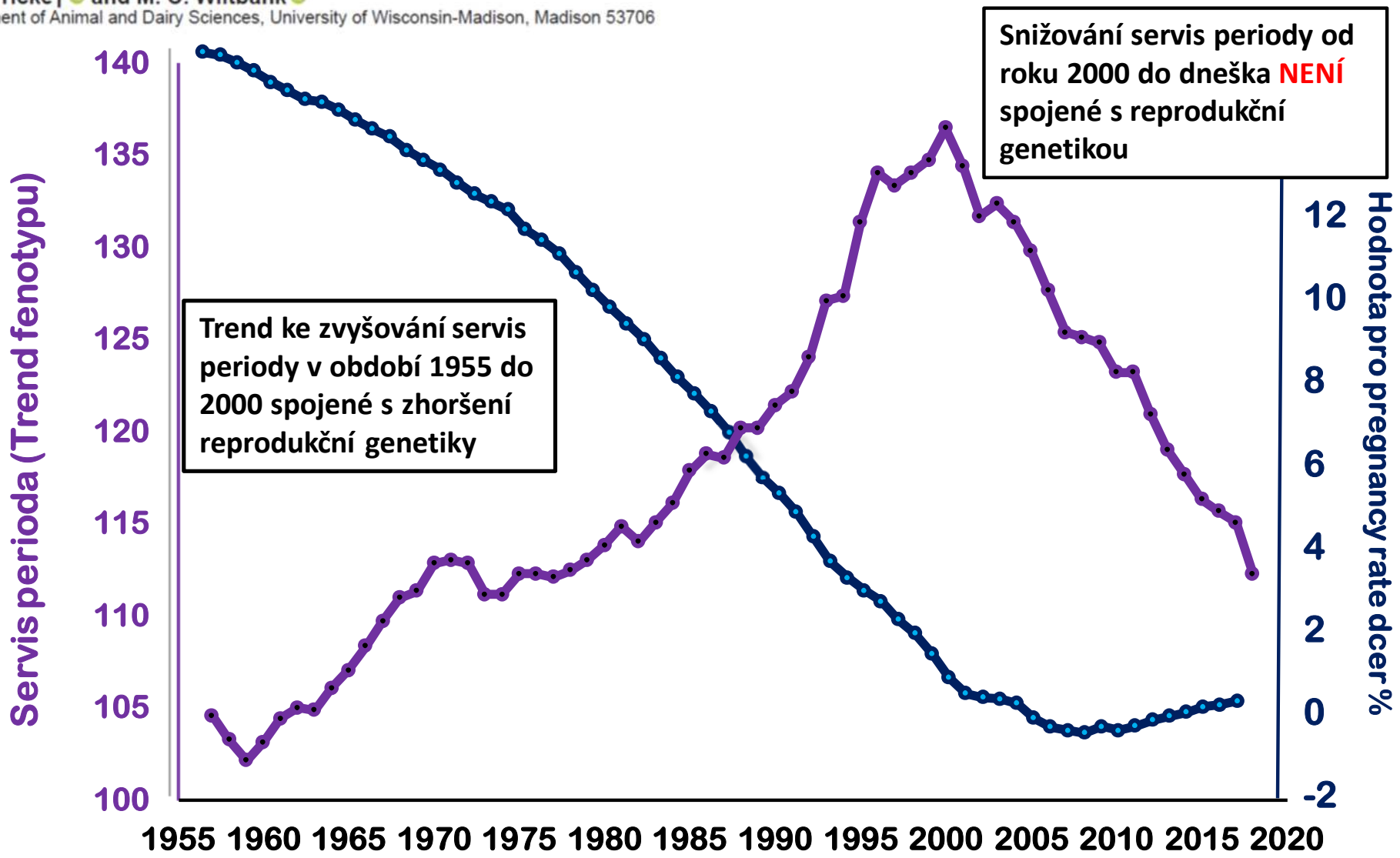


J. Dairy Sci. 105:4679–4689
https://doi.org/10.3168/jds.2021-21431


CDCB
COUNCIL ON DAIRY CATTLE BREEDING

# *Symposium review:* The implications of spontaneous versus synchronized ovulations on the reproductive performance of lactating dairy cows*

P. M. Fricke† and M. C. Wiltbank
Department of Animal and Dairy Sciences, University of Wisconsin-Madison, Madison 53706



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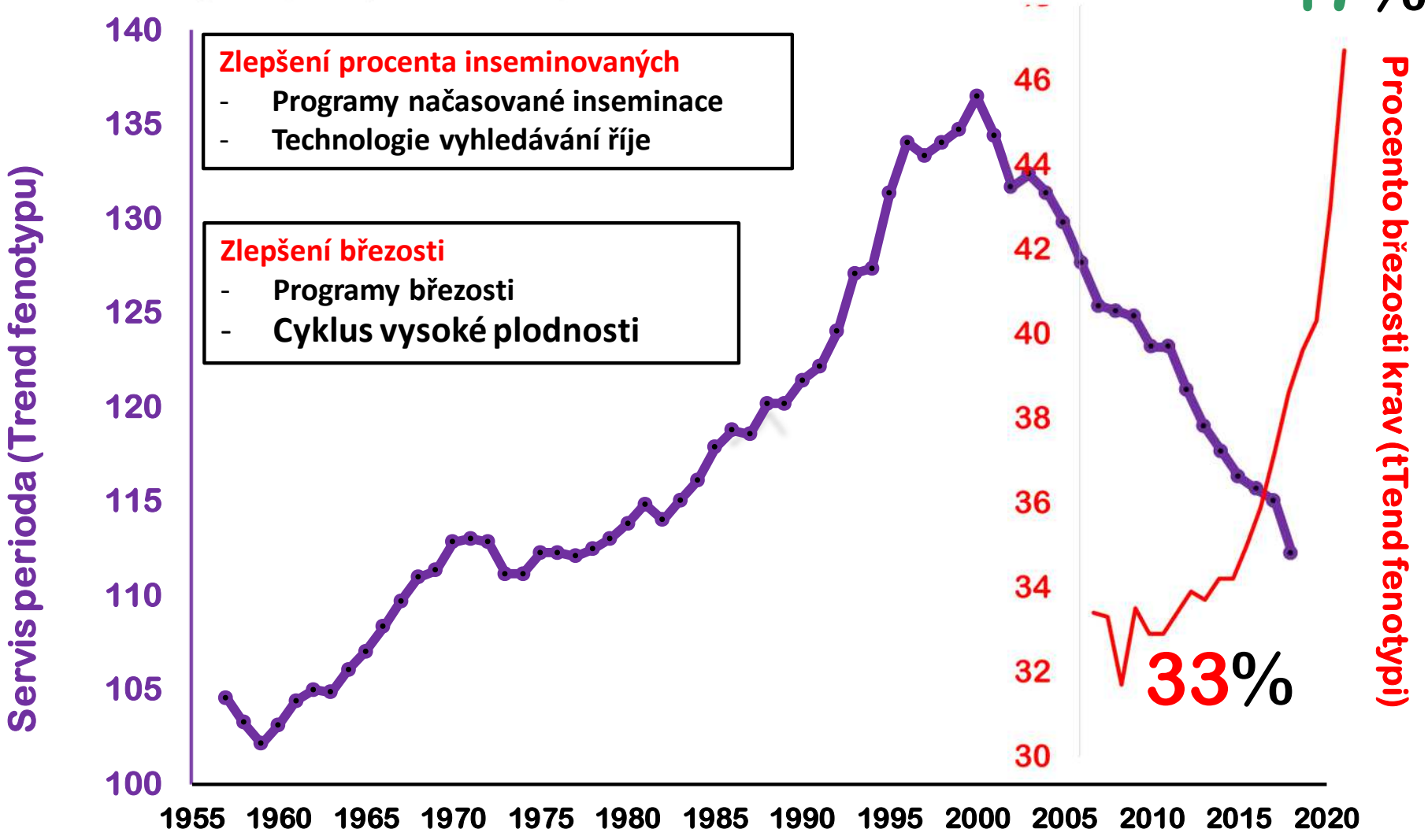
47%

**Zlepšení procenta inseminovaných**
- Programy načasované inseminace
- Technologie vyhledávání říje

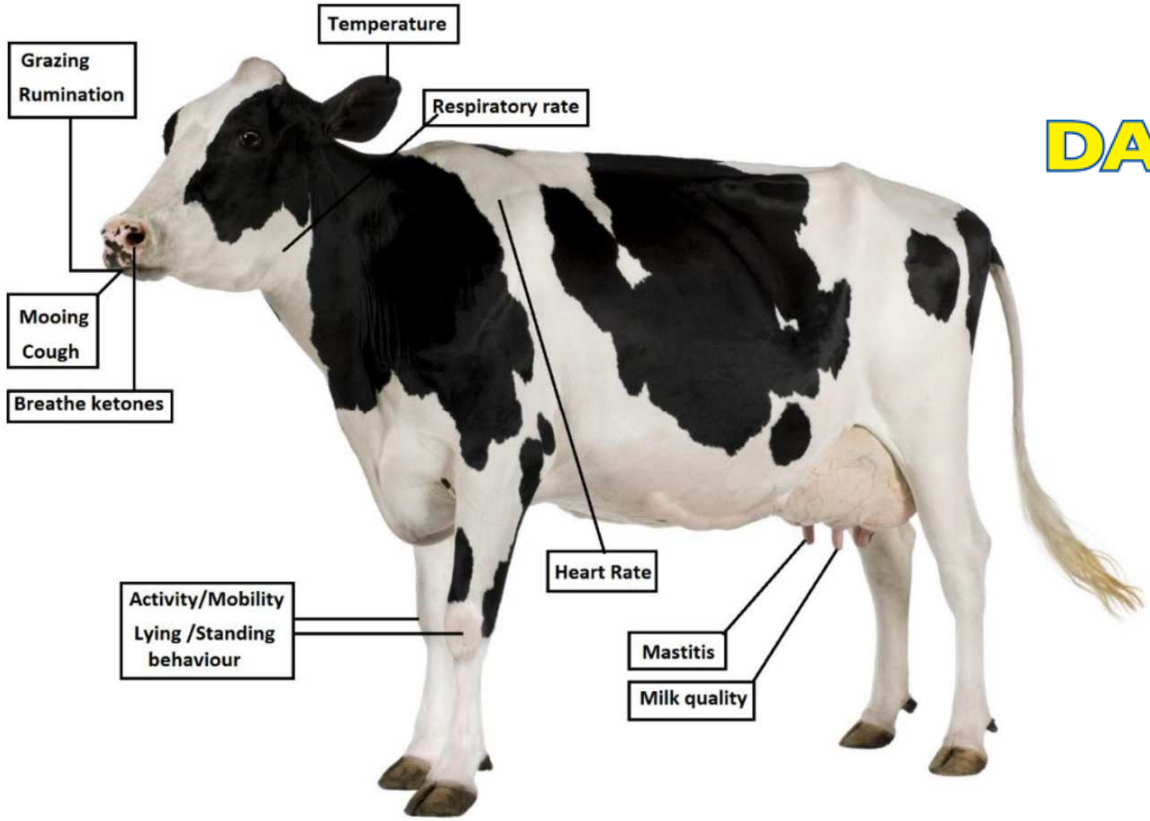
**Zlepšení březosti**
- Programy březosti
- Cyklus vysoké plodnosti



# Systémy sledování aktivity

Alta COW WATCH
Repro, health & welfare

SMARTBOW




DAIRYMASTER

GEA
GEA Farm Technologies

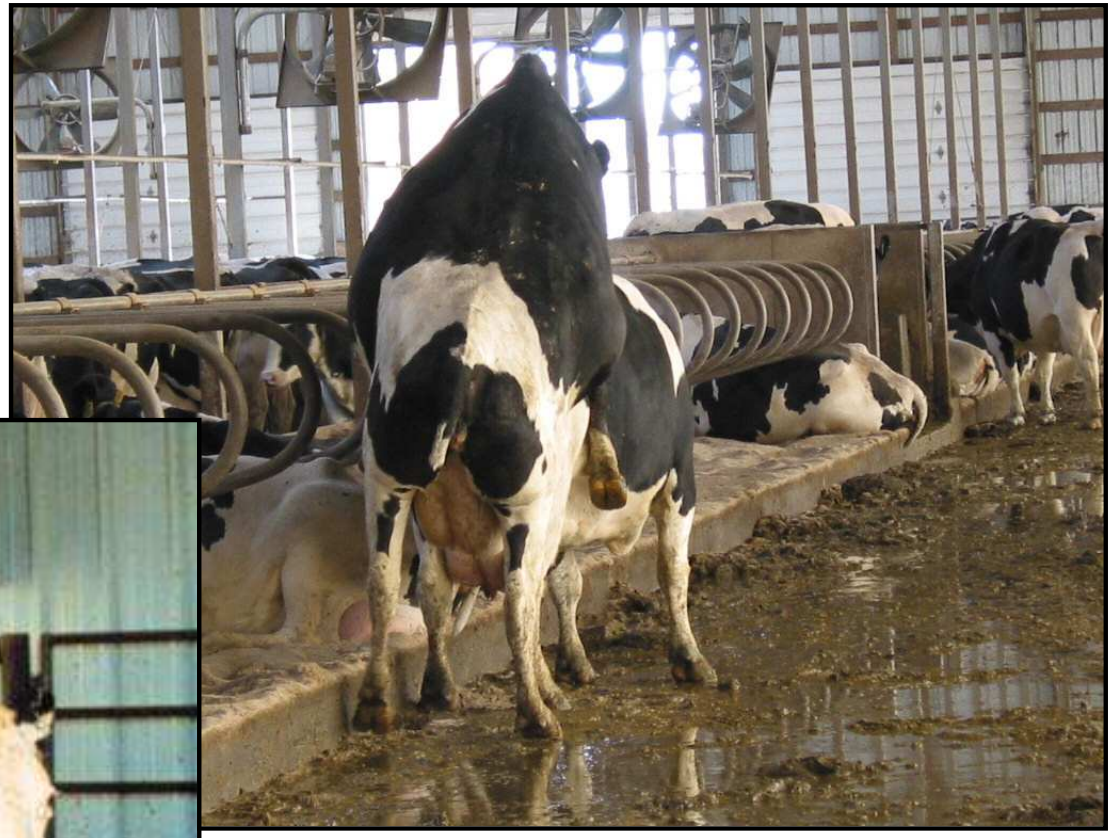
LELY

Allflex

SCR by Allflex
Make every cow count

# Říjové chování u dojených krav

## Kdy je optimální doba pro inseminaci?

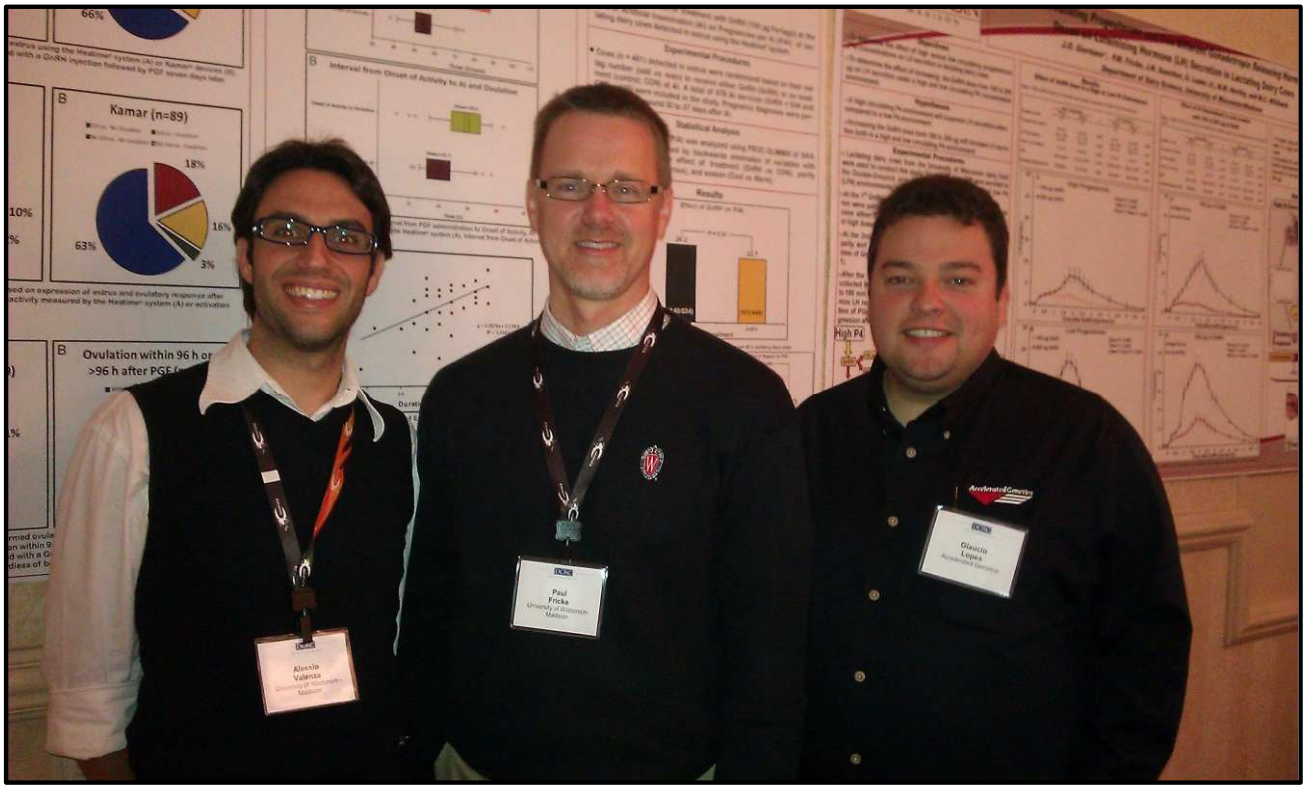


**~8 až 12 hodin před ovulací**
**= ~12 h**
**Po začátku říje**

J. Dairy Sci. 95:7115–7127
http://dx.doi.org/10.3168/jds.2012-5639


# Assessment of an accelerometer system for detection of estrus and treatment with gonadotropin-releasing hormone at the time of insemination in lactating dairy cows

**A. Valenza,*†‡[1] J. O. Giordano,*[1] G. Lopes Jr.,*[1] L. Vincenti,‡ M. C. Amundson,* and P. M. Fricke*[2]**
*Department of Dairy Science, University of Wisconsin, Madison 53706
†Department of Animal Science, School of Agriculture, University of Turin, Turin, Italy 10095
‡Department of Animal Pathology, School of Veterinary Medicine, University of Turin, Turin, Italy 10095

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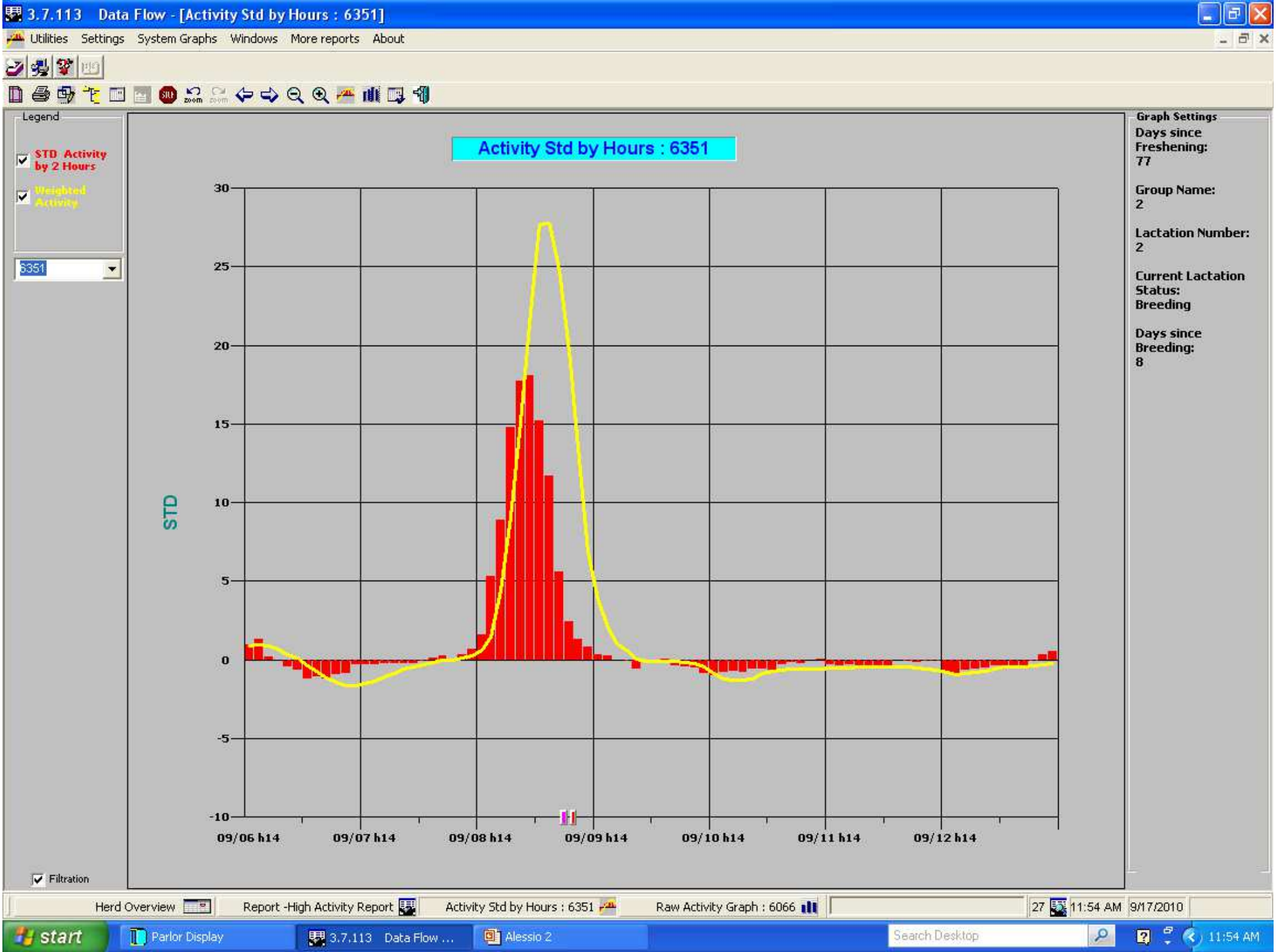
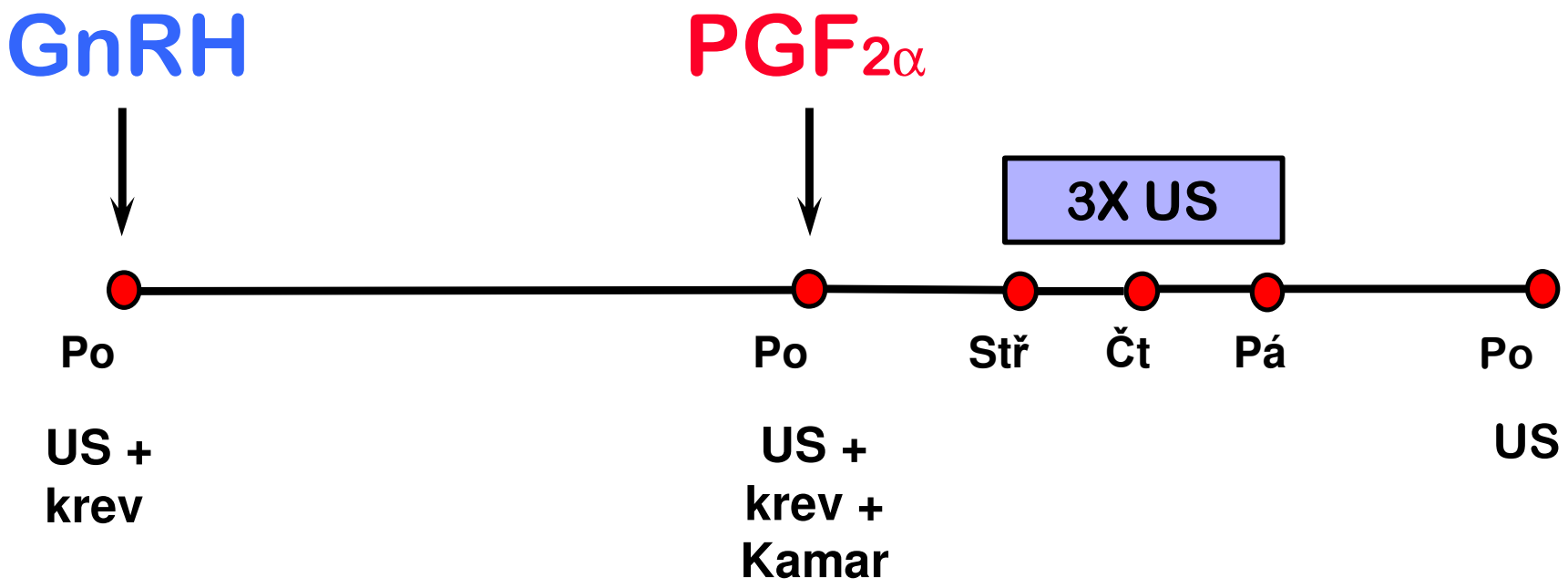

3.7.113 Data Flow - [Activity Std by Hours : 6351]
Utilities Settings System Graphs Windows More reports About
Legend
STD Activity by 2 Hours
Weighted Activity
6351
Activity Std by Hours : 6351
STD
30
25
20
15
10
5
0
-5
-10
09/06 h14
09/07 h14
09/08 h14
09/09 h14
09/10 h14
09/11 h14
09/12 h14
Filtration
Graph Settings
Days since Freshening:
77
Group Name:
2
Lactation Number:
2
Current Lactation Status:
Breeding
Days since Breeding:
8
Herd Overview
Report -High Activity Report
Activity Std by Hours : 6351
Raw Activity Graph : 6066
27
11:54 AM
9/17/2010
start
Parlor Display
3.7.113 Data Flow ...
Alessio 2
Search Desktop
11:54 AM

# Plán pokusu

**U krav (n = 112) mezi 46 až 52 DIM byl použit synchronizační protokol G-P:**




**Krávy, u kterých se nezdařila synchronizace (n = 23) byly z hodnocení vyřazeny, do konečné analýzy bylo zahrnuto 89 krav**

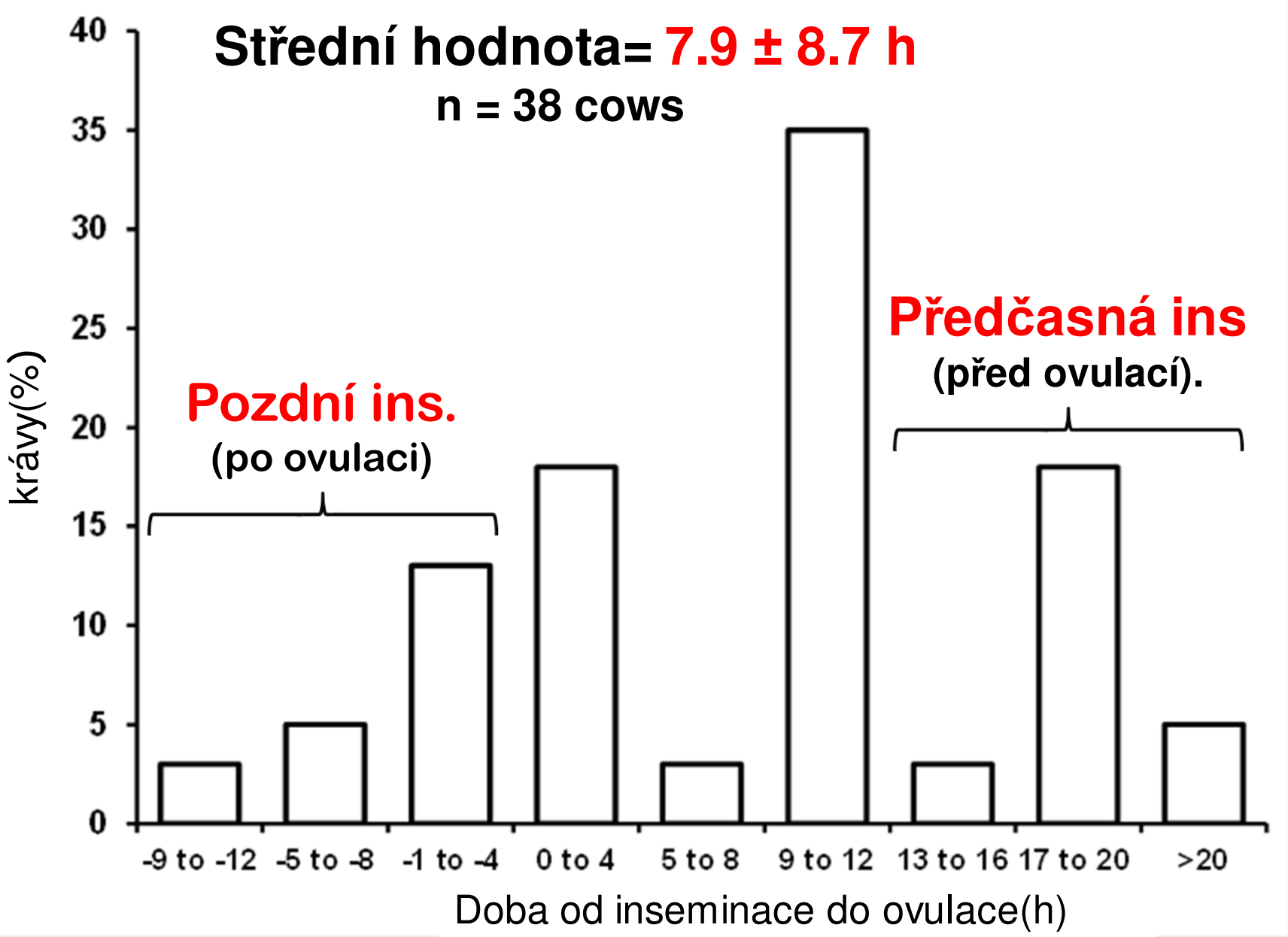
# Procento krav u kterých byla zjištěna říje a jejich rozdělení dle říjové aktivity a ovulace

Valenza et al., 2012; J. Dairy Sci. 95:7115-7127

| Položka | Akcelerometry | | Heatmount detektory |
|---|---|---|---|
| | ------- % (n/n) ------- | | ------- % (n/n) ------- |
| **Říje** | **71** (63/89) | | **66** (59/89) |
| Ovulace | 95 (60/63) | | 93 (55/59) |
| Bez ovulace | 5 (3/63) | | 7 (4/59) |
| **Bez říje** | **29** (26/89) | | **34** (30/89) |
| Ovulace | 35 (9/26) | **10%** | 47 (14/30) |
| Bez ovulace | 65 (17/26) | **20%** | 53 (16/30) |

# Doba od inseminace do ovulace

Valenza et al., 2012; J. Dairy Sci. 95:7115-7127



# Procento neovulujících krav při první inseminaci

| | | |
|---|---|---|
| 19 různých studií shrnutých v Bamber et al., 2009 | n = 5,818 | 23.3% |
| 6 různých studií shrnutých v Wiltbank et al., 2006 | n = 2,783 | 26.1% |
| 8 různých studií shrnutých v Bisinotto et al., 2010 | n = 5,607 | 22.6% |
| Stevenson et al., 2008 | n = 1060 | 25.5% |
| Veira-Neto et al., 2014 | n = 1,569 | 22.2% |
| Colazo et al., 2013 | n = 608 | 17.6% |
| Herlihy et al., 2012 | n = 373 | 24.7% |
| | n = 16,651 | 23% |

# SYNCHRONIZATION OF OVULATION IN DAIRY COWS USING $PGF_{2\alpha}$ AND GnRH

J. R. Pursley[1], M. O. Mee[2], and M. C. Wiltbank[1]

[1]Department of Dairy Science
University of Wisconsin- Madison, Madison, WI 53706
[2]Department of Animal Science
University of Wisconsin-Platteville, Platteville, WI 53818

Received for publication: *February 28, 1995*
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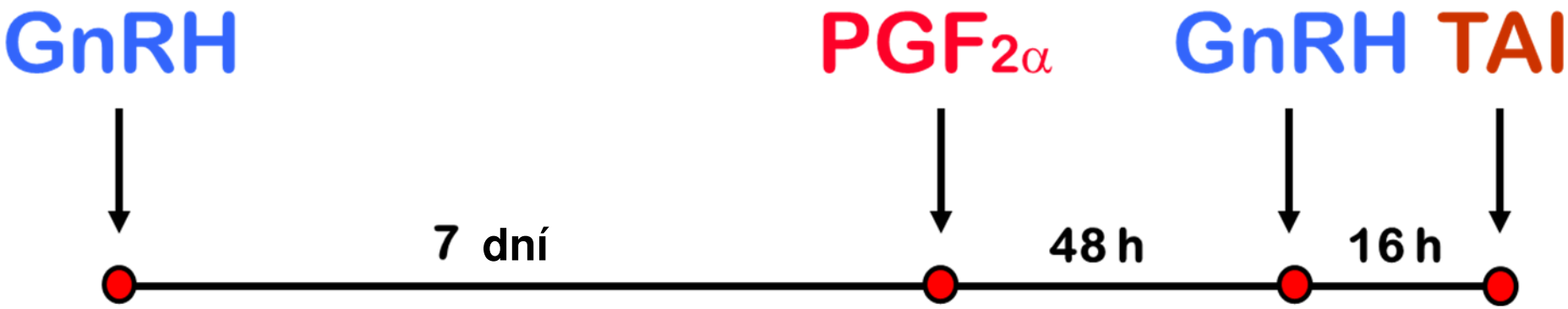
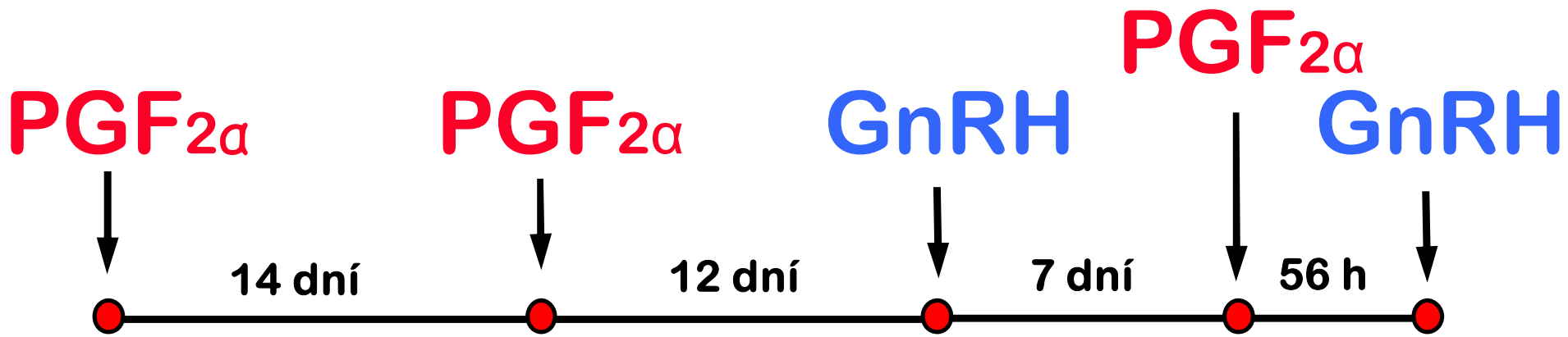
**Theriogenology 44:915; 1995**



J. Dairy Sci. 84:1646–1659


# Effects of Presynchronization and Bovine Somatotropin on Pregnancy Rates to a Timed Artificial Insemination Protocol in Lactating Dairy Cows

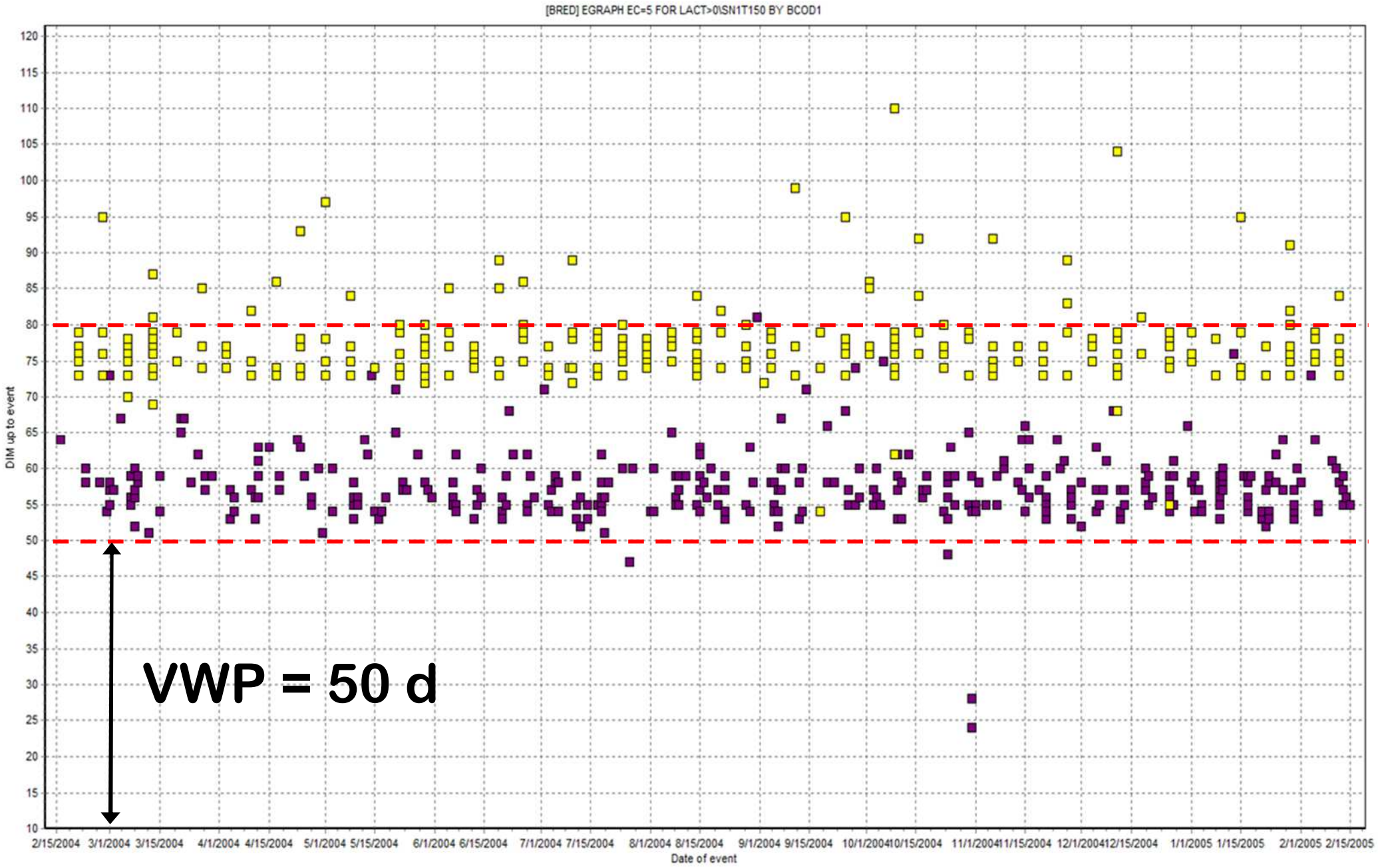
F. Moreira,* C. Orlandi,* C. A. Risco,† R. Mattos,*
F. Lopes,* and W. W. Thatcher*
*Department of Dairy and Poultry Sciences,
University of Florida, Gainesville, 32611
†Large Animal Clinical Sciences,
University of Florida, Gainesville, 32610




## Mylné představy:

- Přímý vliv $PGF_{2\alpha}$ na dělohu
- Vybírání třešniček

# Presynch-Ovsynch + Říje



J. Dairy Sci. 97:2771–2781
http://dx.doi.org/10.3168/jds.2013-7366


# Reproductive performance of lactating dairy cows managed for first service using timed artificial insemination with or without detection of estrus using an activity-monitoring system

P. M. Fricke,[1] J. O. Giordano,[2] A. Valenza, G. Lopes Jr., M. C. Amundson, and P. D. Carvalho
Department of Dairy Science, University of Wisconsin, Madison 53706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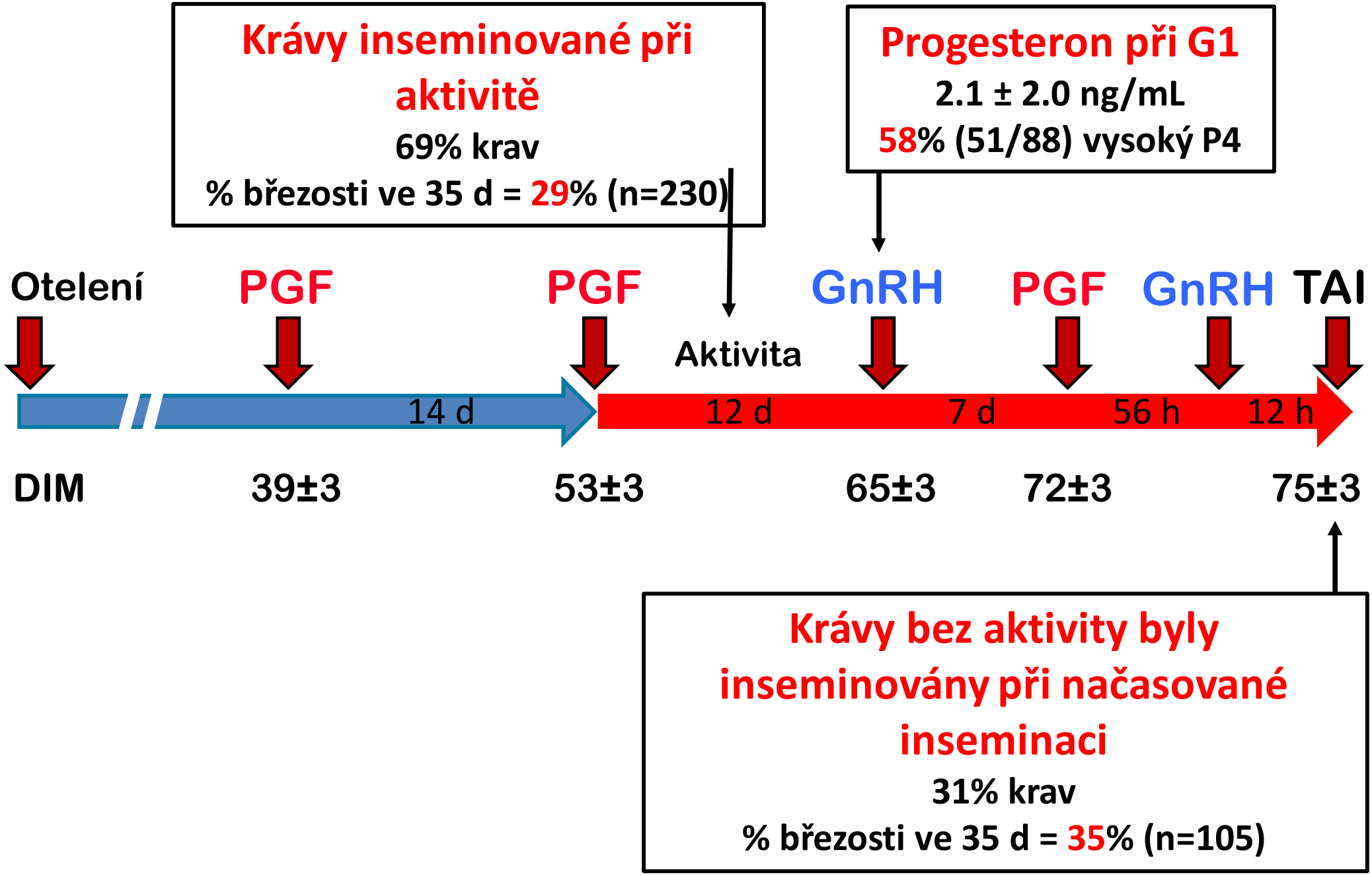
DAIRY SCIENCE
University of Wisconsin-Madison

# Postup 2: Presynch-Ovsynch s inseminací při aktivitě



# Postup 3: Presynch/Ovsynch se 100% načasované inseminace

**Progesteron při G1**
2.6 ± 1.9 ng/mL
75% (153/205) vysoký P4

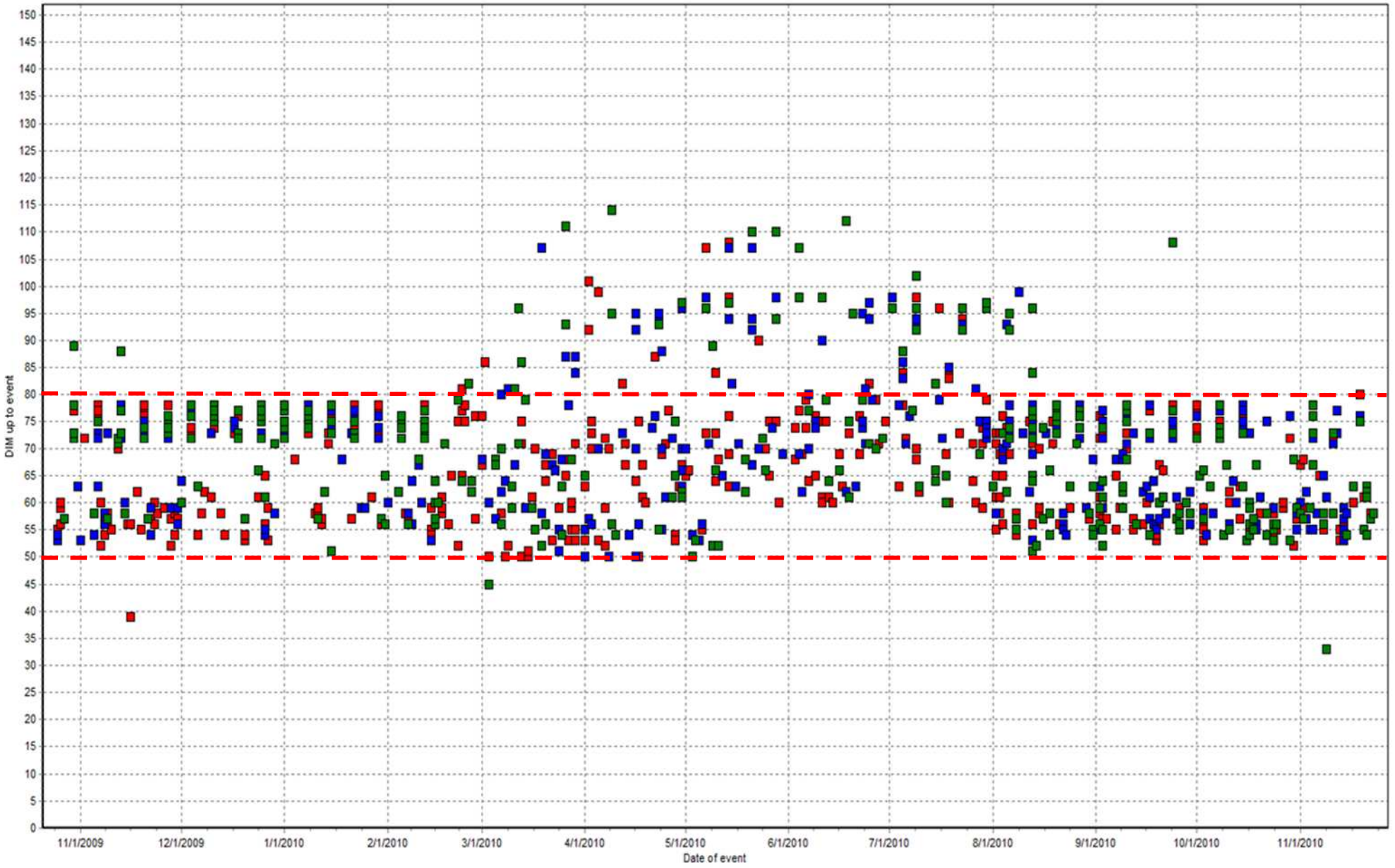
**Krávy s aktivitou byly inseminované načasovanou inseminací**
70% krav
% březosti ve 35 d = 41% (n=232)


| DIM | 39±3 | 53±3 | 65±3 | 72±3 | 75±3 |
|---|---|---|---|---|---|

**Progesteron při G1**
1.7 ± 1.7 ng/mL
55% (45/82) vysoký P4

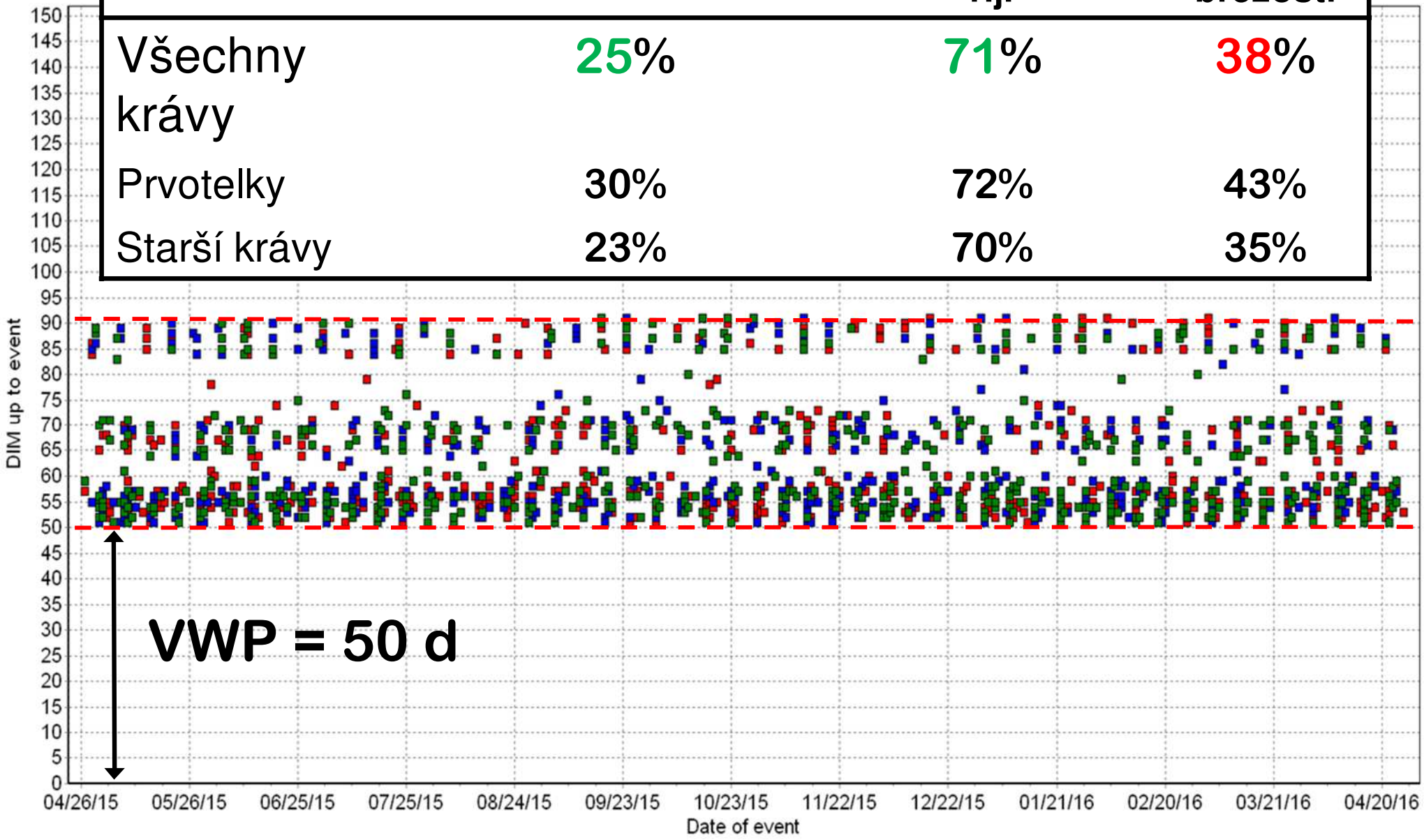
**Krávy bez aktivity byly inseminovány při načasované inseminaci**
30% krav
% březosti ve 35 d = 32% (n=99)

# Jak Nezvládnout první inseminaci



# Maximum říjí- minimum načasované inseminace

| Parita | 21-d Preg Rate | % vyhledaných říjí | % březosti |
|---|---|---|---|
| Všechny krávy | 25% | 71% | 38% |
| Prvotelky | 30% | 72% | 43% |
| Starší krávy | 23% | 70% | 35% |



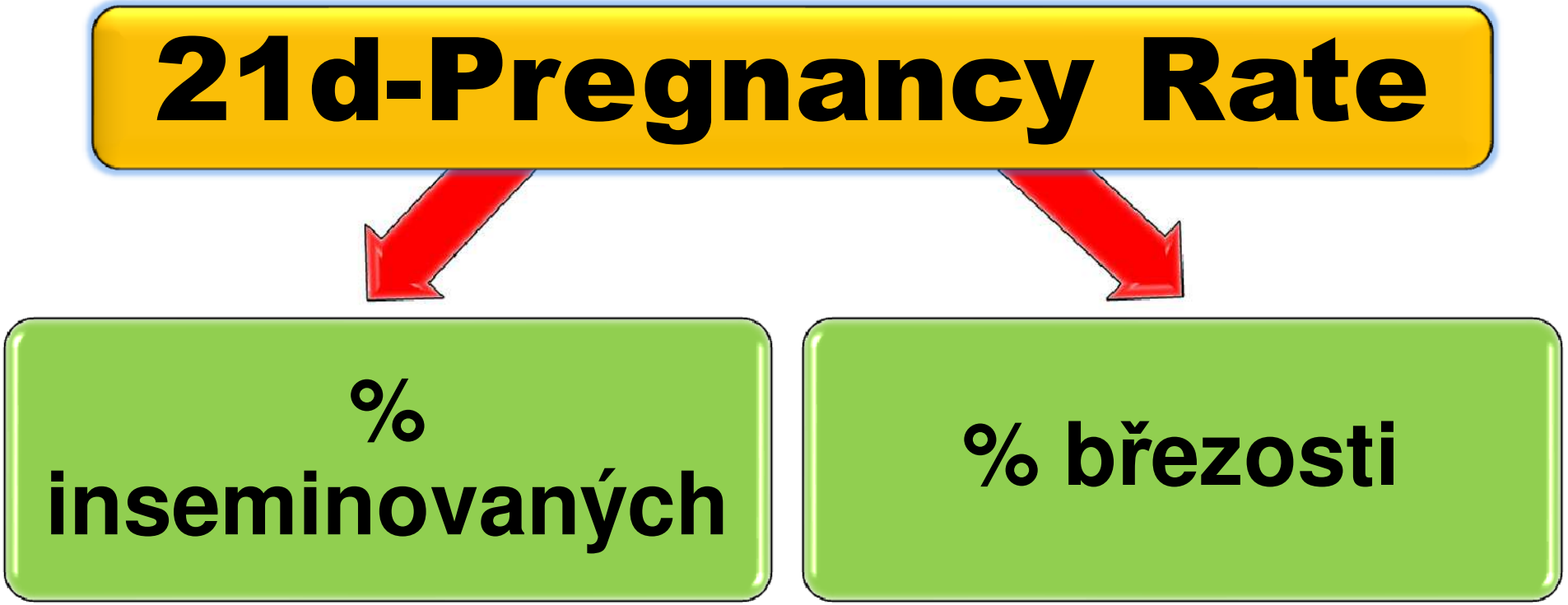
DAIRY CATTLE REPRODUCTION COUNCIL

# Oceněné 2017

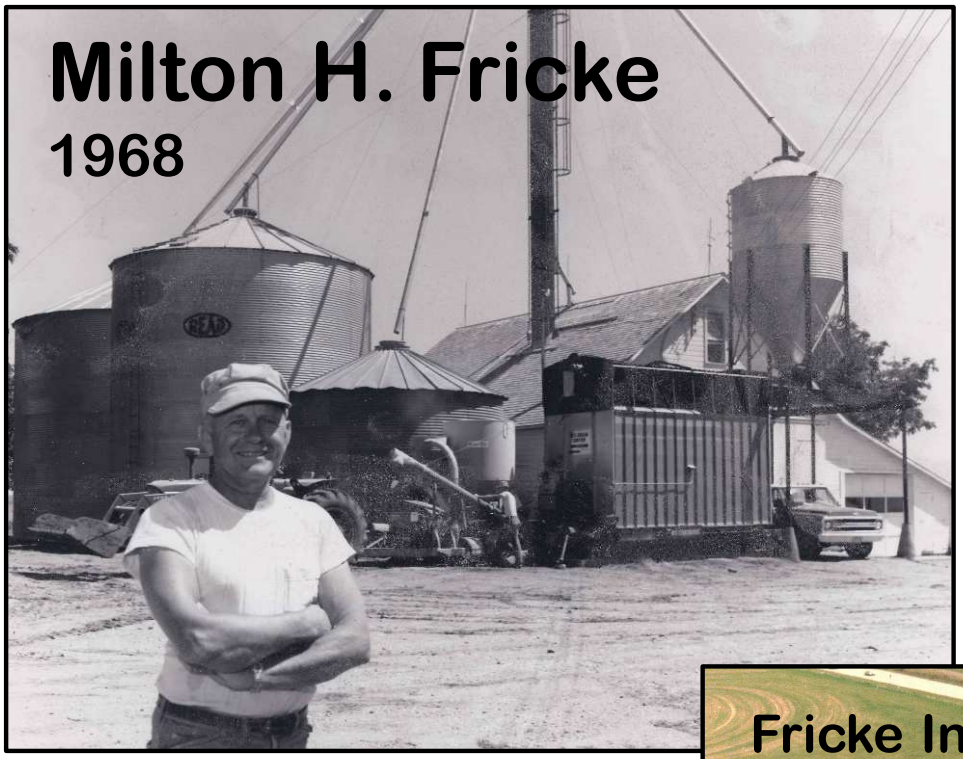
| Cena | 100% načas. ins. | 100% senzory | Senzory/ načas. ins. +sensory +Resynch | 100% načas.ins. na 1. + senzory + Resynch |
|---|---|---|---|---|
| Platinové | 0 | 0 | 2 | 4 |
| Zlaté | 0 | 0 | 4 | 2 |
| Stříbrné | 0 | 0 | 3 | 3 |
| Bronzové | 0 | 0 | 4 | 2 |
| Celkem | 0 | 0 | 13 | 11 |

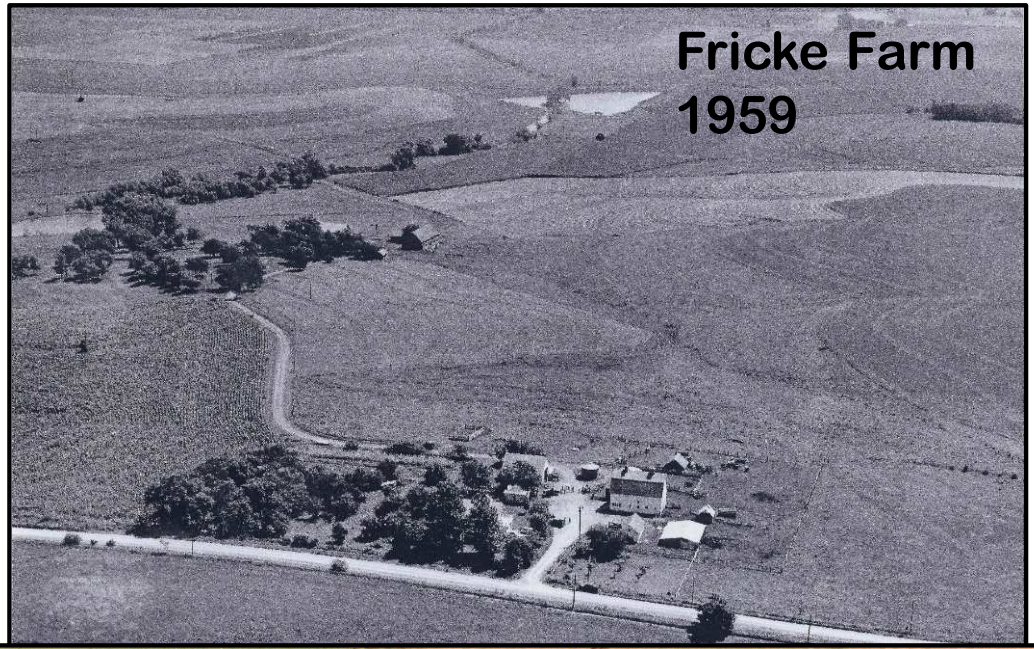
**Pregnancy rate pro vítěze platinové ceny DCRC byla v rozsahu od 30% do 47%**

# Zvýšení % ins. & % březosti: 1 inseminace

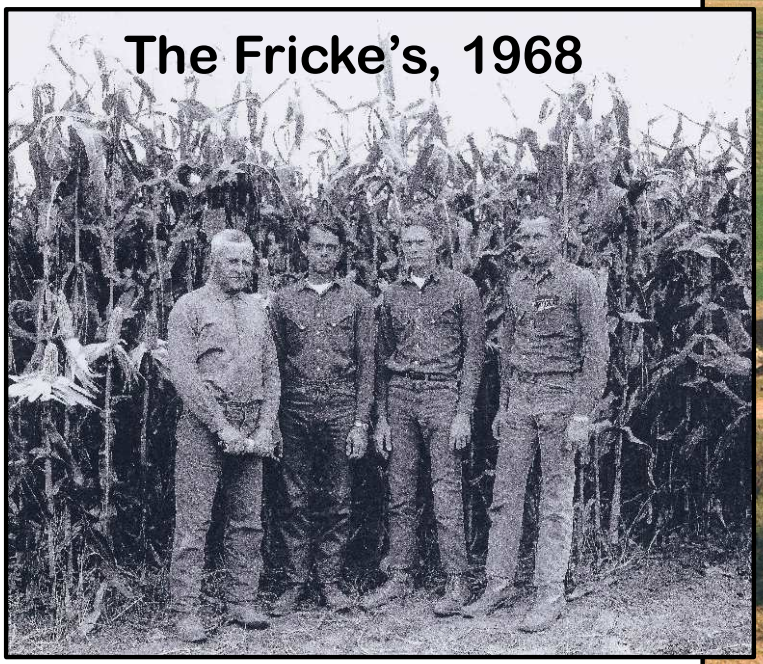


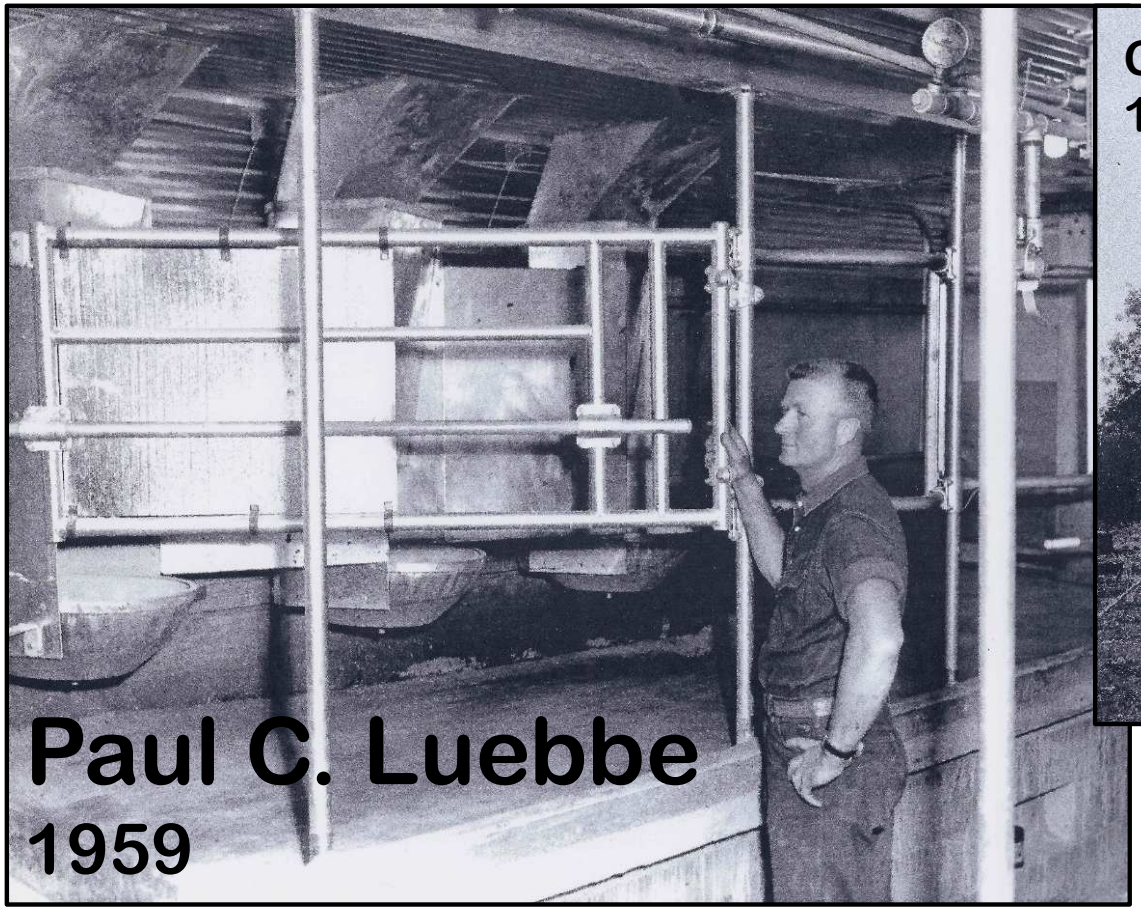

## t.j. programy plodnosti


Milton H. Fricke
1968

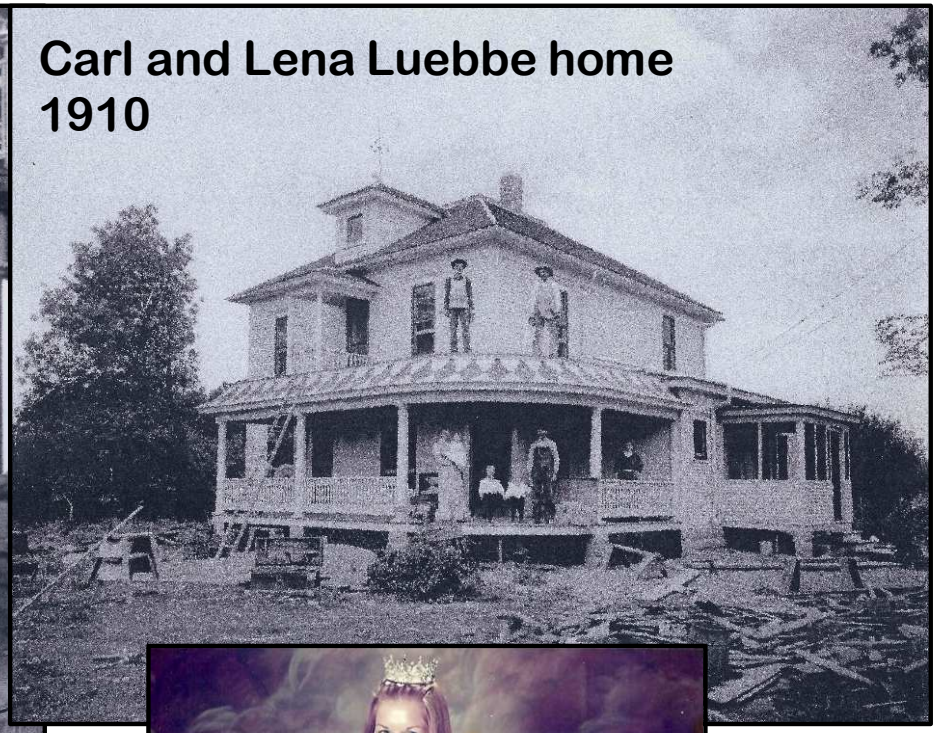

Fricke Farm
1959


Fricke Inc.
1986

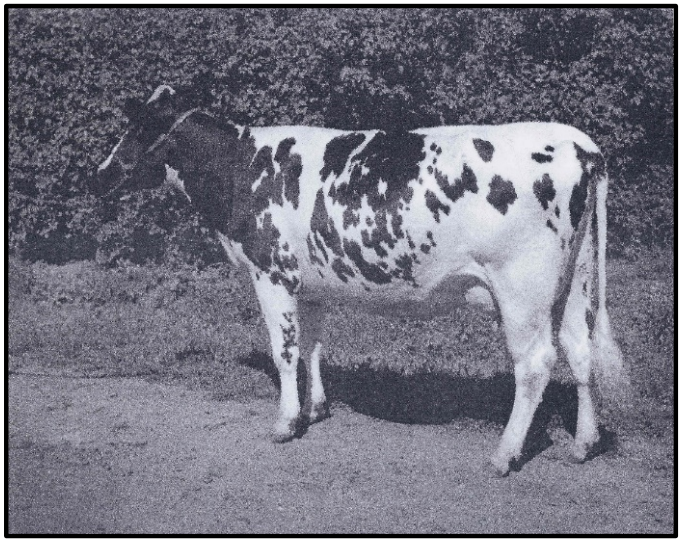

The Fricke's, 1968



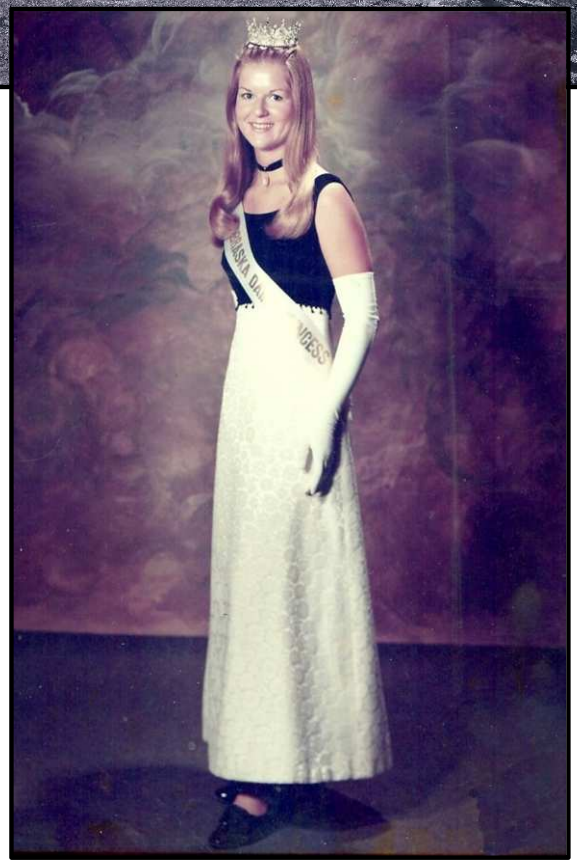
**Paul C. Luebbe**
**1959**



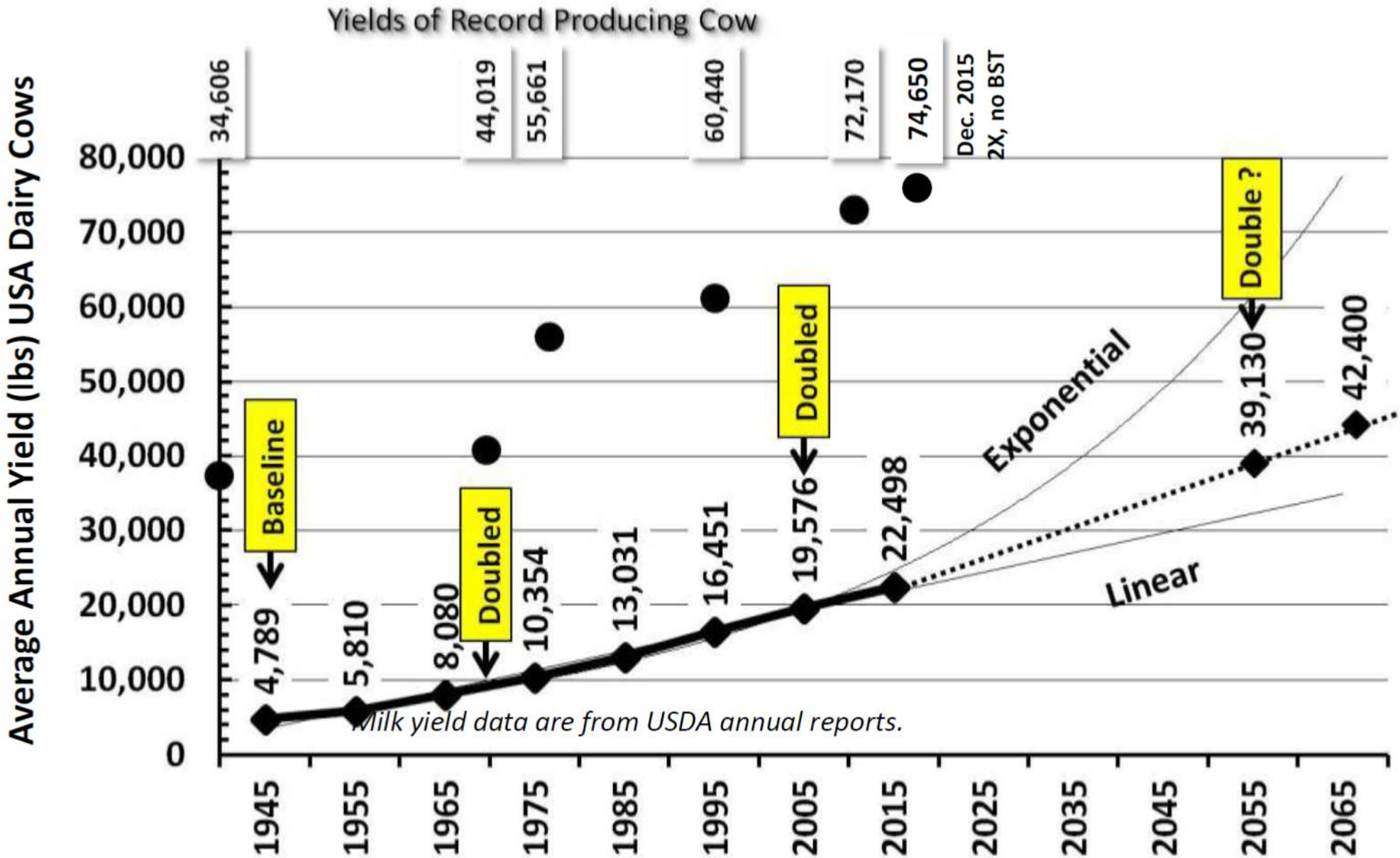
**Carl and Lena Luebbe home**
**1910**



**Betsy**
**Champion Holstein**
**AkSarBen, 1957**



# Past milk yield and Britt projections (USA)*




*Average annual yield data include cows of all breed types and are based on USDA annual data. Record yields are registered Holstein data. Projections are linear or exponential curves in Excel using average data. Dotted line is Britt's estimate of where we will be.

# Selz-Pralle Aftershock 3918

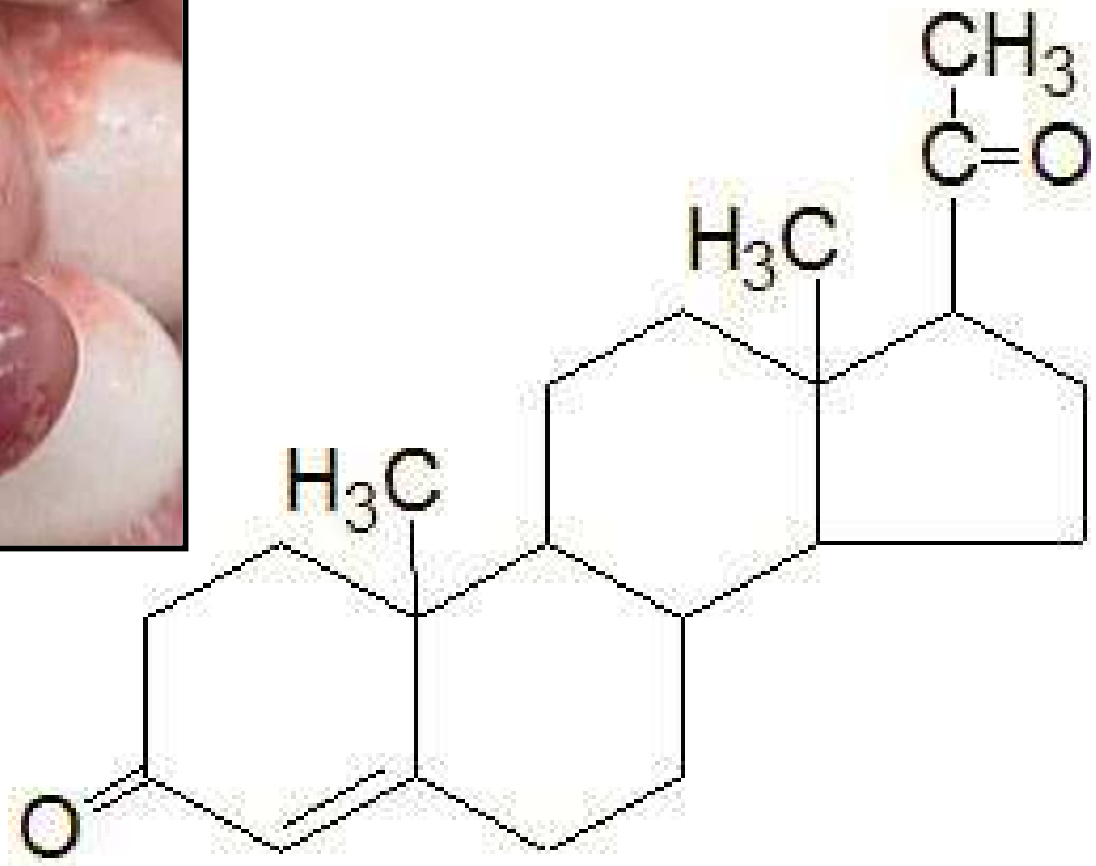
**October 19, 2017**

**Bred and owned by the Selz-Pralle Dairy in Humbird, WI, she set a 365-day record of 78,170 pounds (35,531 Kg) of milk with 3,094 pounds of fat and 2,393 pounds of protein.**


**Selz-Pralle Dairy has 360 Registered Holstein cows with a rolling herd average of 30,917 pounds of milk, 1,219 pounds of fat, and 969 pounds of protein.**

| Item | Cows | Heifers |
|---|---|---|
| Estrus duration (h) | 7.3 ± 7.2 | 11.3 ± 6.9 |
| Conception rate (%) | <50 | >50 |
| Pregnancy Loss | High | Low |
| Multiple ovulation (%) | 14 | 5 |
| Twinning rate (%) | 8 | ~1 |

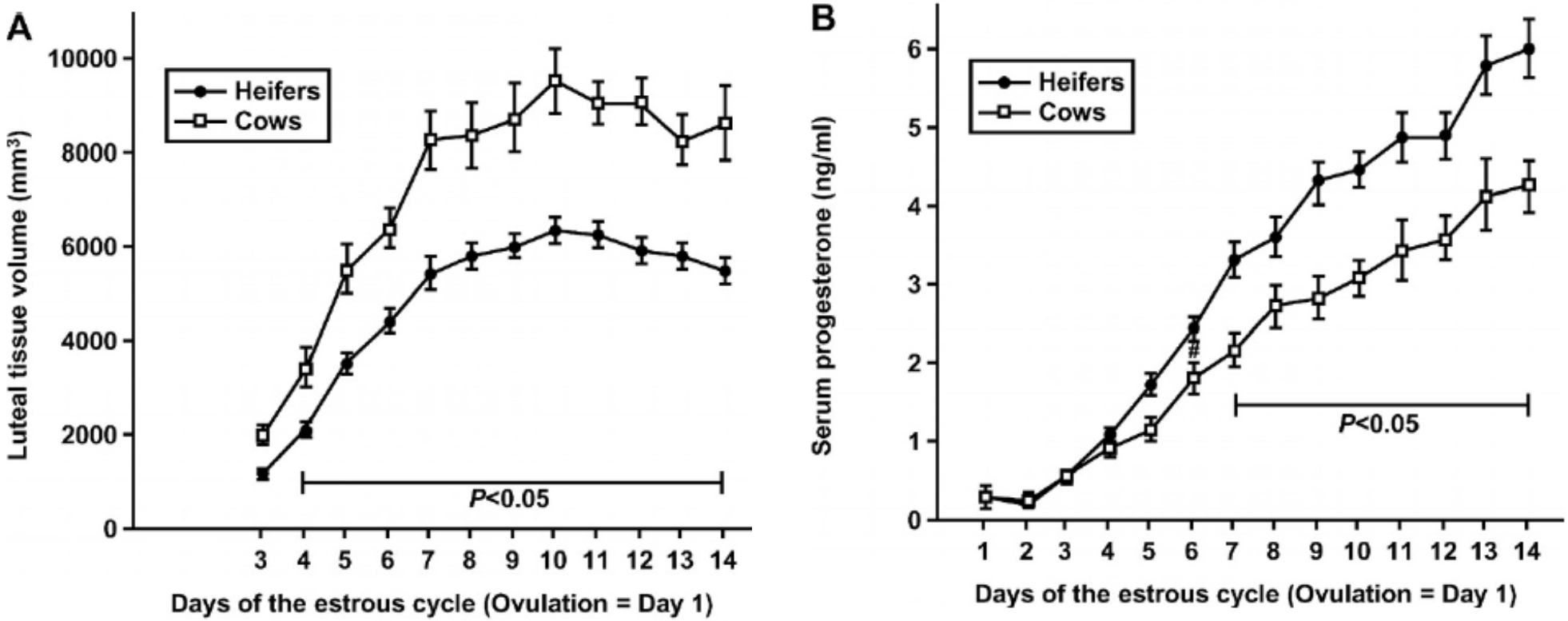
# Progesterone



J. Dairy Sci. 87:905–920


# Comparison of Ovarian Function and Circulating Steroids in Estrous Cycles of Holstein Heifers and Lactating Cows

**R. Sartori,[1] J. M. Haughian,[1] R. D. Shaver,[1] G. J. M. Rosa,[2] and M. C. Wiltbank[1]**
[1]Dairy Science Department, University of Wisconsin, Madison 53706 and
[2]Departments of Animal Science, and Fisheries & Wildlife,
Michigan State University, East Lansing, 48824



J. Dairy Sci. 85:2831–2842


# High Feed Intake Increases Liver Blood Flow and Metabolism of Progesterone and Estradiol-17$\beta$ in Dairy Cattle

S. Sangsritavong, D. K. Combs, R. Sartori, L. E. Armentano, and M. C. Wiltbank
Department of Dairy Science, University of Wisconsin, Madison 53706

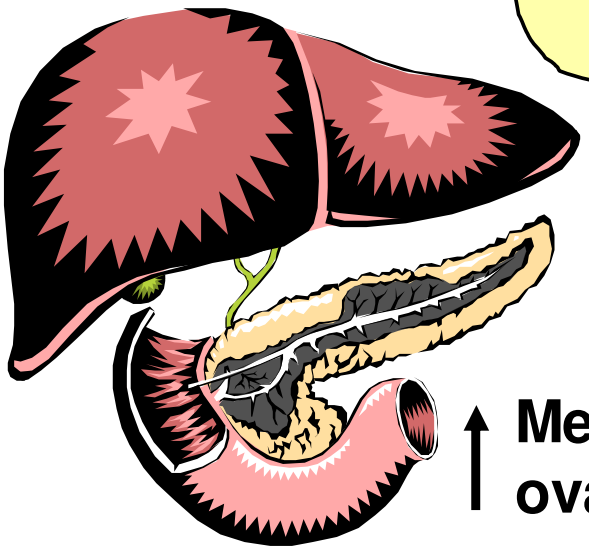
**Vysoký příjem sušiny**

↑ Průtok krve vnitřnostmi

**Vysoká užitkovost**

r = 0.88;
Harrison et al.,
J. Dairy Sci.
73:2749; 1990

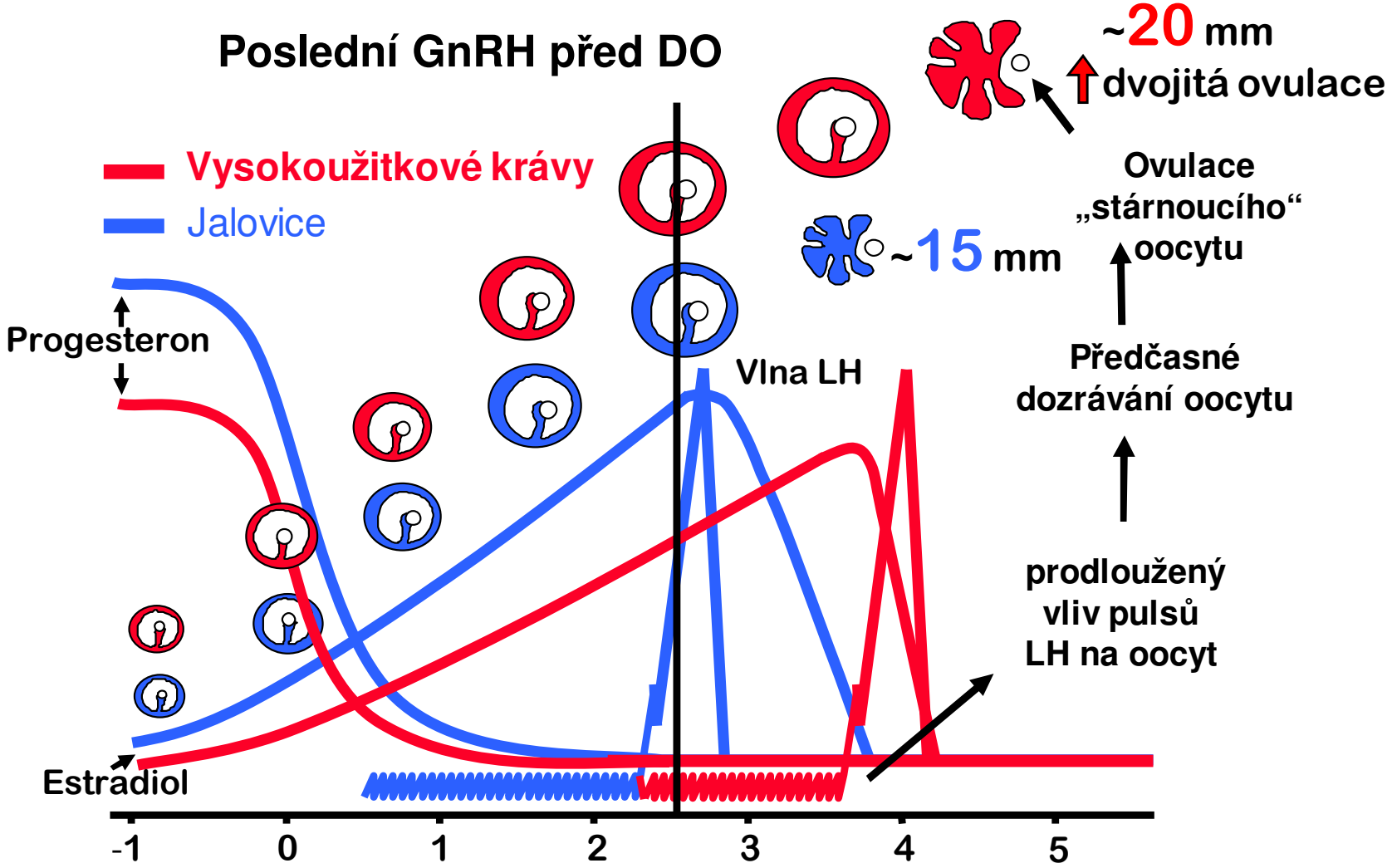
↑ Průtok krve játry



↑ Metabolismus ovariálních steroidů

**Snížení oběhu E2 & P4**

# Vliv metabolismu jaterních steroidů na reprodukci



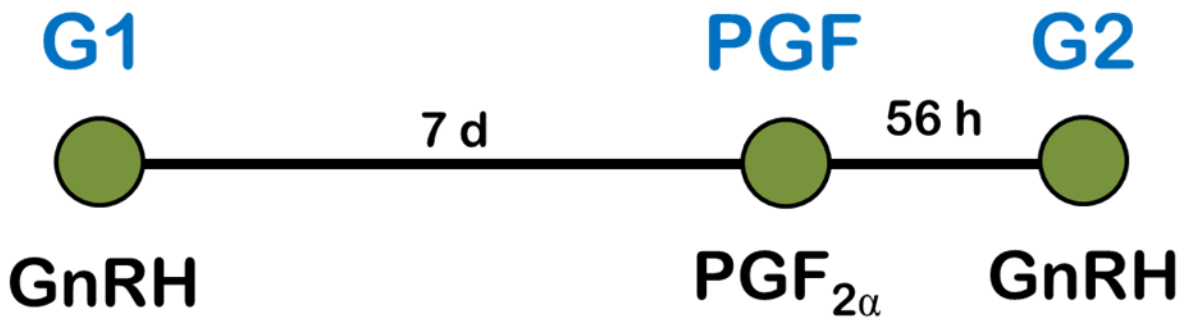
SYNCHRONIZATION OF OVULATION IN DAIRY COWS USING $PGF_{2\alpha}$ AND GnRH

J. R. Pursley[1], M. O. Mee[2], and M. C. Wiltbank[1]

[1]Department of Dairy Science
University of Wisconsin- Madison, Madison, WI 53706
[2]Department of Animal Science
University of Wisconsin-Platteville, Platteville, WI 53818

Received for publication: *February 28, 1995*
Accepted: *April 28, 1995*

**Theriogenology 44:915; 1995**




# Zapamatujte si:

**Klíčový faktor ovlivňující plodnost po Ovsynchu je v odpovědi na každou ze tří aplikací hormonů, která může být určena při použití progesteronových profilů.**

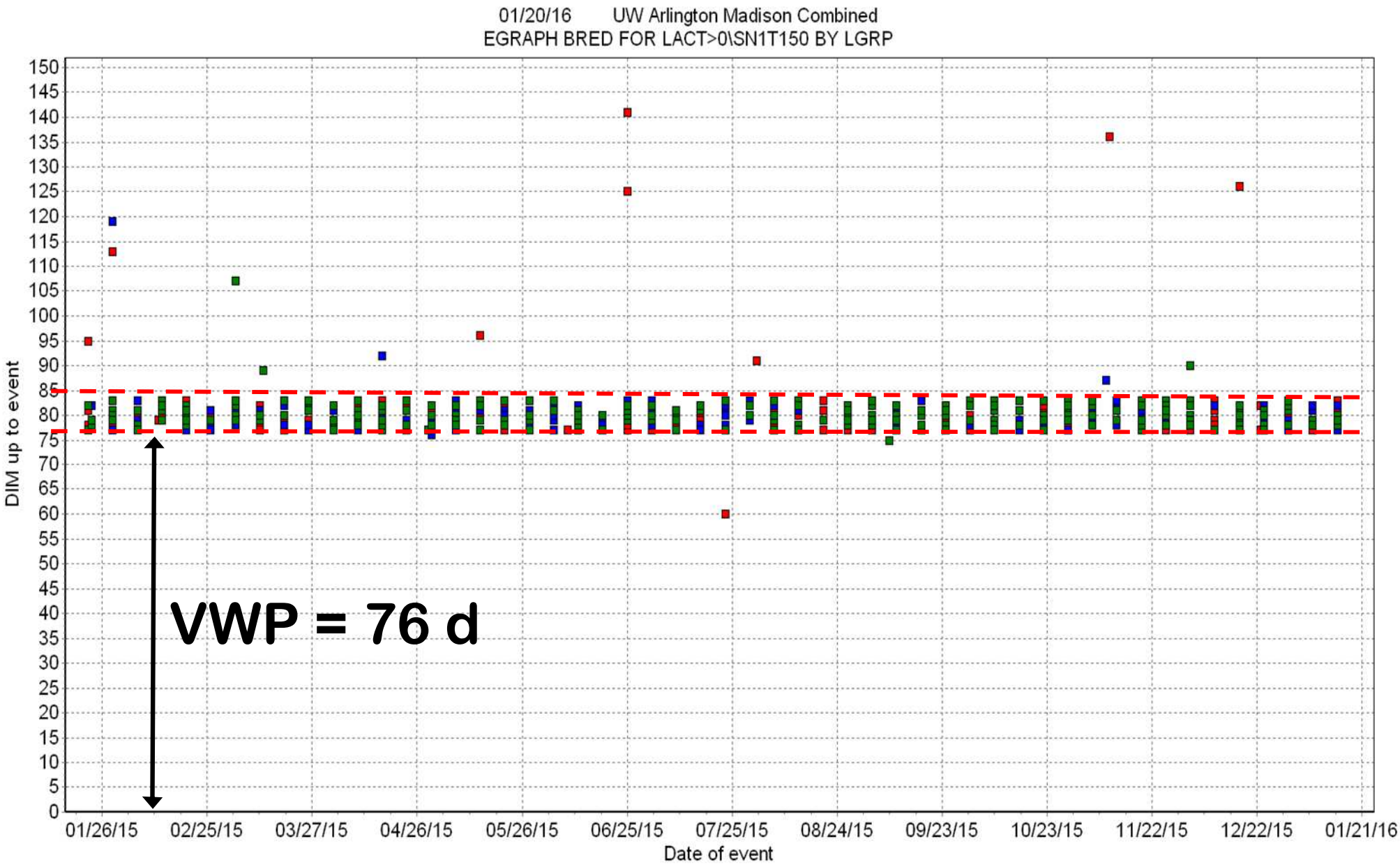
J. Dairy Sci. 92:1412–1422
doi:10.3168/jds.2008-1289


# Effects of additional prostaglandin $F_{2\alpha}$ and estradiol-17β during Ovsynch in lactating dairy cows

**D. J. Brusveen, A. H. Souza, and M. C. Wiltbank[1]**
Department of Dairy Science, University of Wisconsin, Madison 53706

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| | | | | | GnRH | |
| | | | | | PGF | |
| | GnRH | | | | | |
| | GnRH | | | | | |
| | PGF | PGF | GnRH | INS | | |

# 100 % časovaných AI na 1. AI



J. Dairy Sci. 100:8507–8517
https://doi.org/10.3168/jds.2017-13210


# Fertility of lactating Holstein cows submitted to a Double-Ovsynch protocol and timed artificial insemination versus artificial insemination after synchronization of estrus at a similar day in milk range

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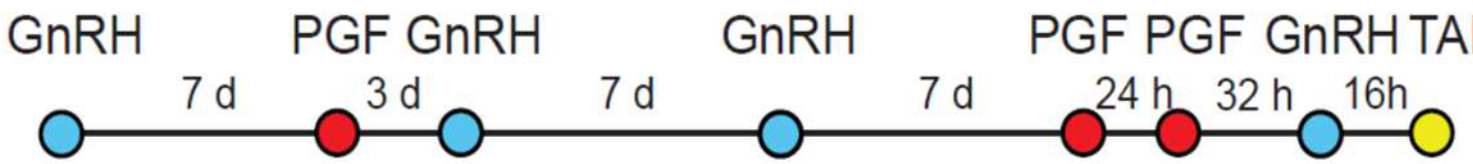
†Diessen Serviços Veterinários Lda, 7001 Évora, Portugal
‡Ceva Santé Animale, 10 Avenue de la Ballastiere, 33500 Libourne, France

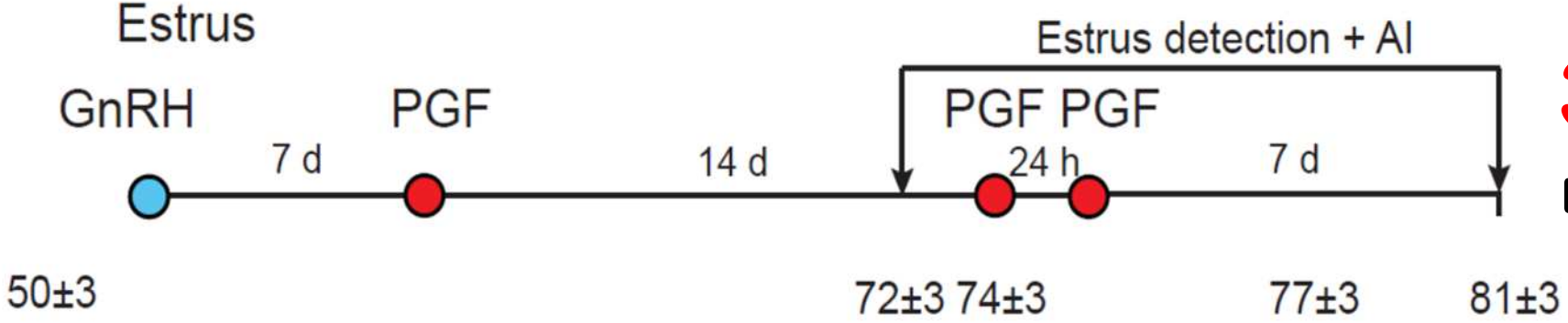
**SR=100%**

Double-Ovsynch




**49%**
**n=294**

Estrus

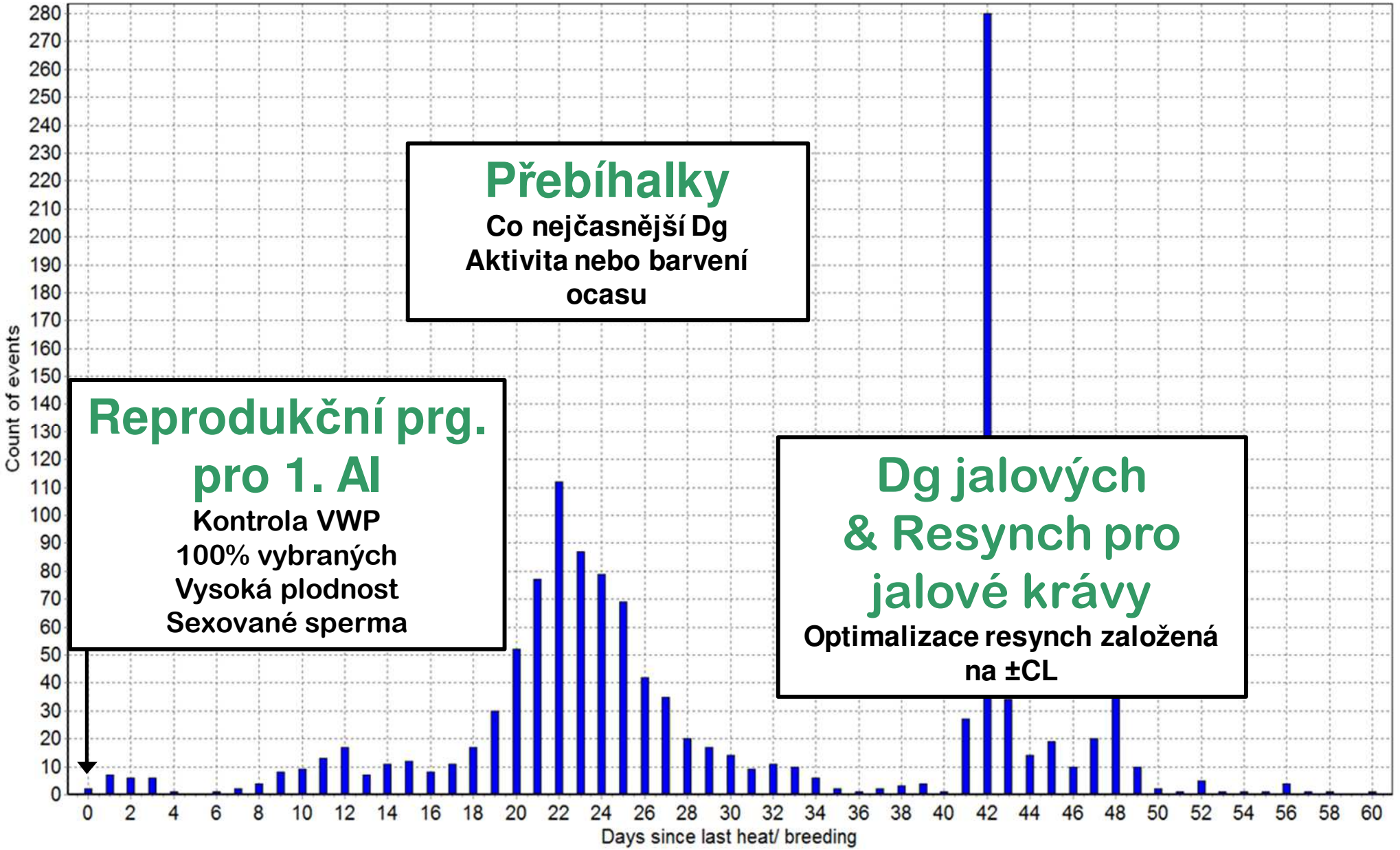



**39%**
**n=284**

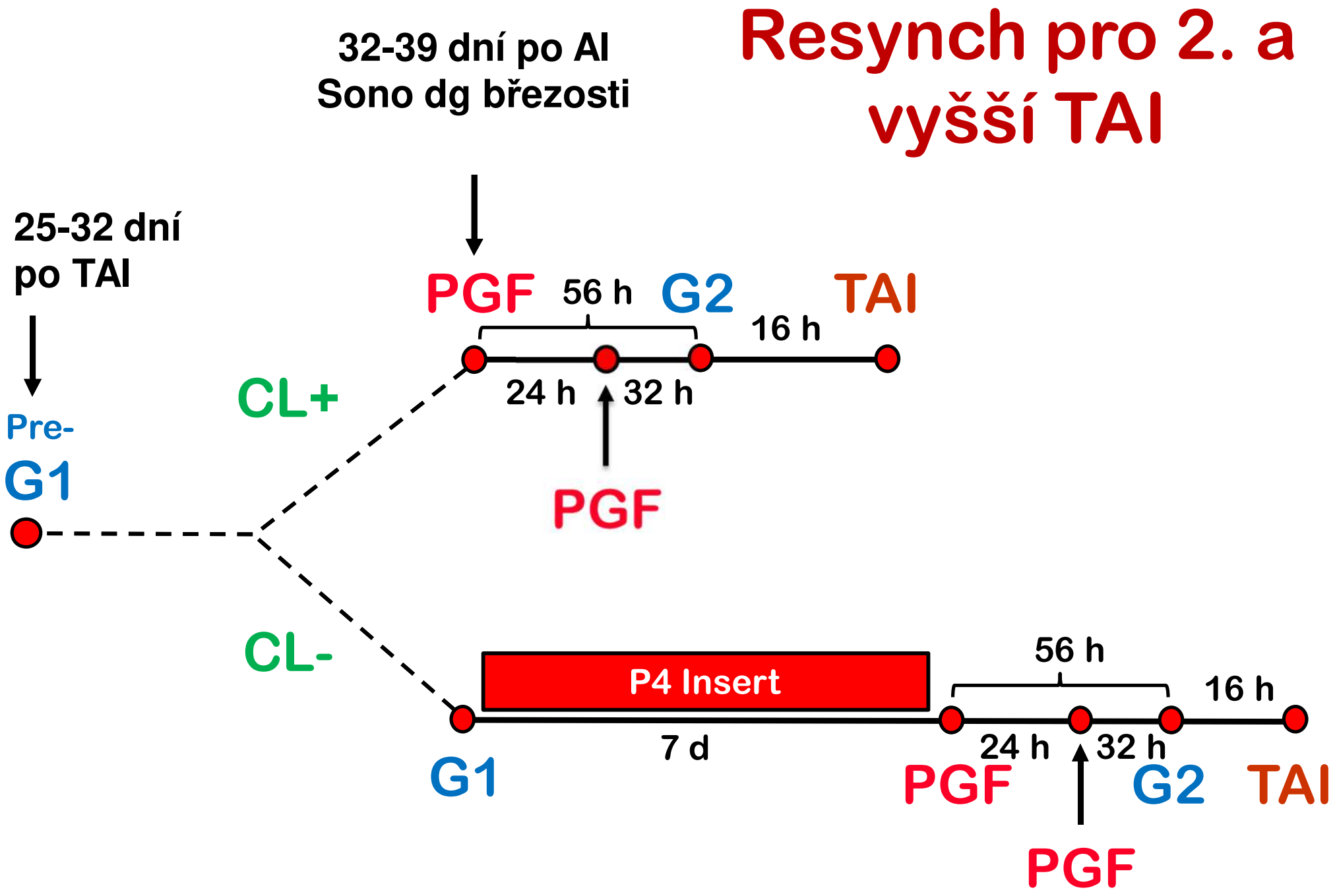
**SR=78%**

**% březích krav 110 DIM: 49 vs. 30**

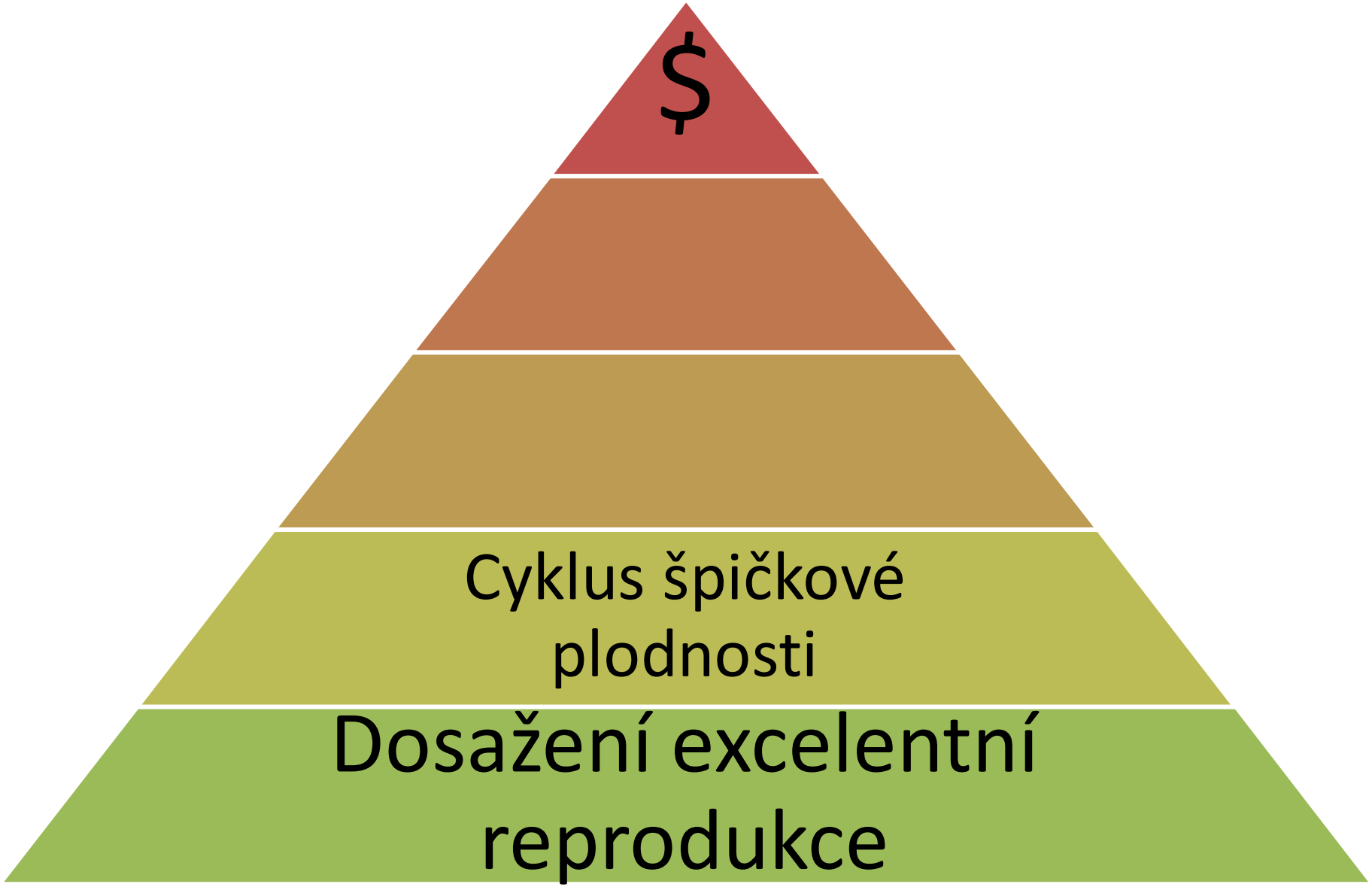
# Kombinace reprodukčních programů a říje



# Resynch pro 2. a vyšší TAI



# Hierarchie reprodukčních potřeb dle Dr. Frickeho



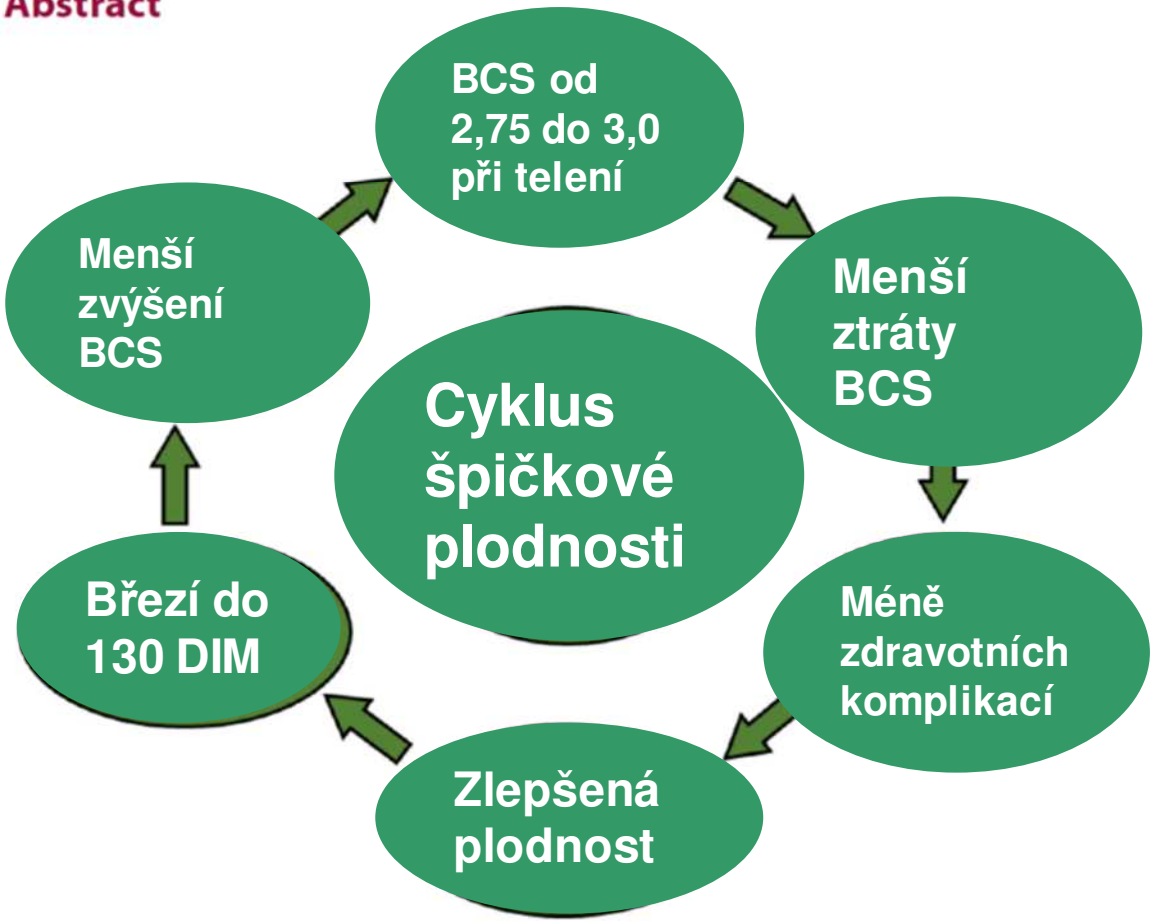
JDS Communications®
2022; 3

https://doi.org/10.3168/jdsc.2022-0280
Mini-Review
Physiology

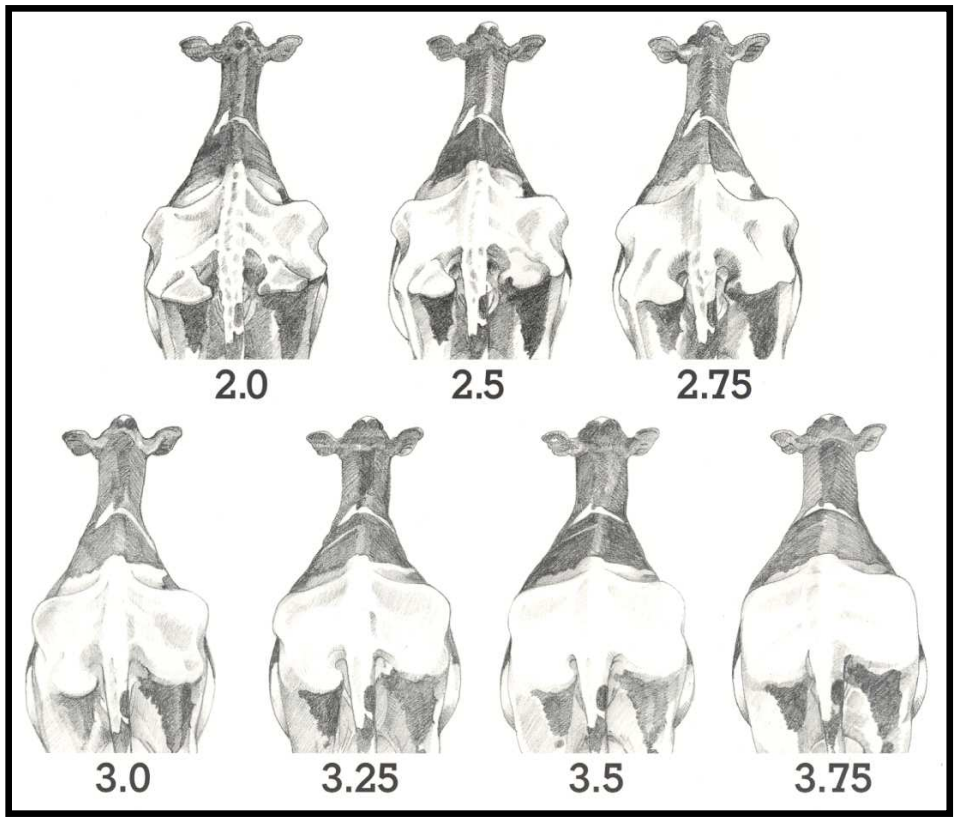
# Mini-Review: Cyklus špičkové plodnosti

P. M. Fricke,[1]* M. C. Wiltbank,[1] and J. R. Pursley[2]

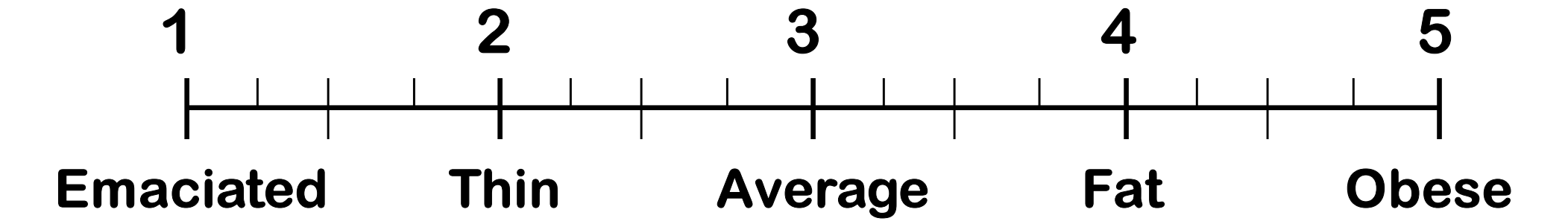
## Graphical Abstract



# Hodnocení kondice (BCS)

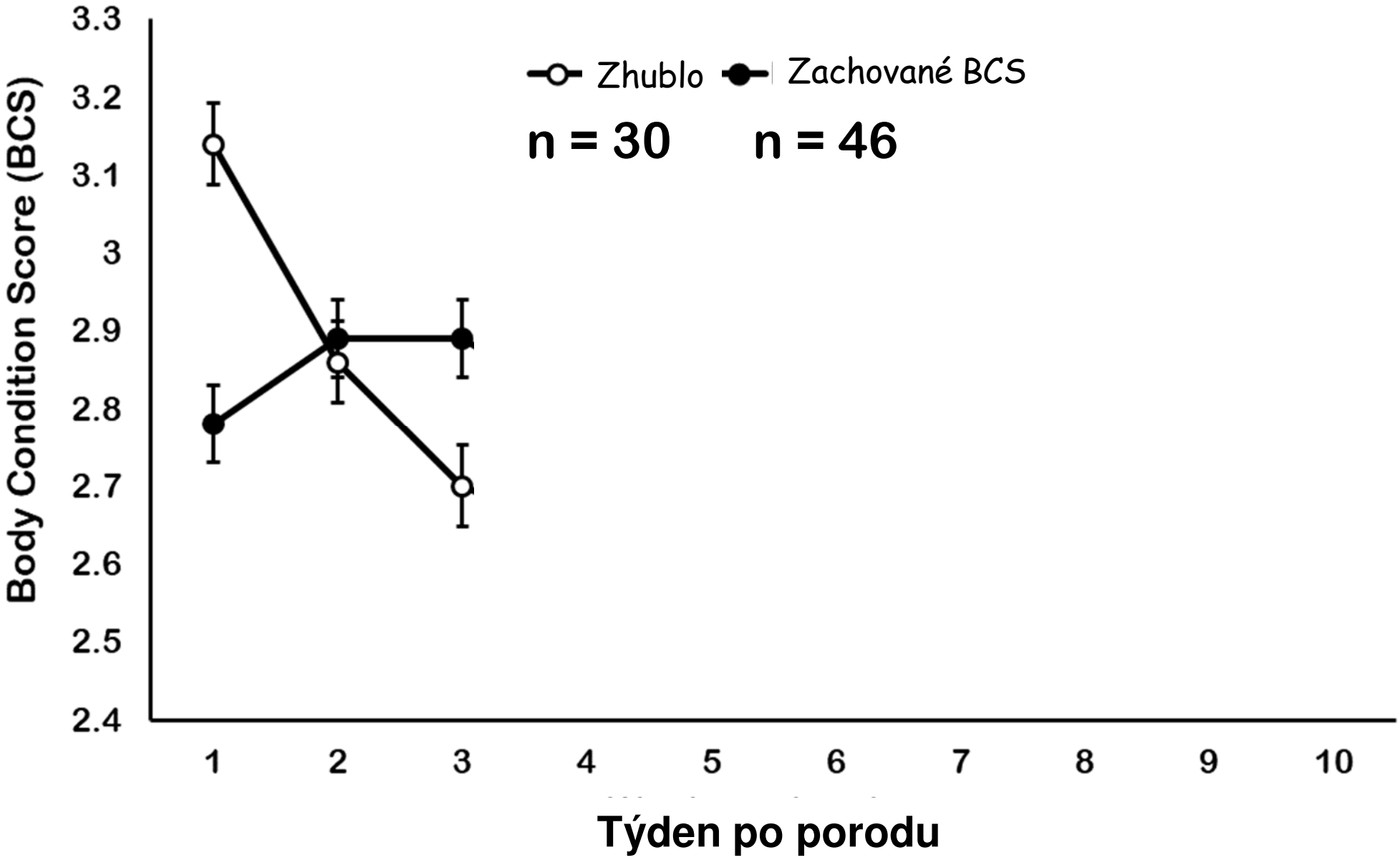



- Hodnocení BCS je neinvazivní metoda pro odhad tukových rezerv
- Definuje: Poměr mezi množstvím tuku a množstvím netukových látek (voda, bílkoviny, popel) v těle
- Změna tělesného stavu je snadný způsob, jak posoudit energetickou bilanci na farmách.

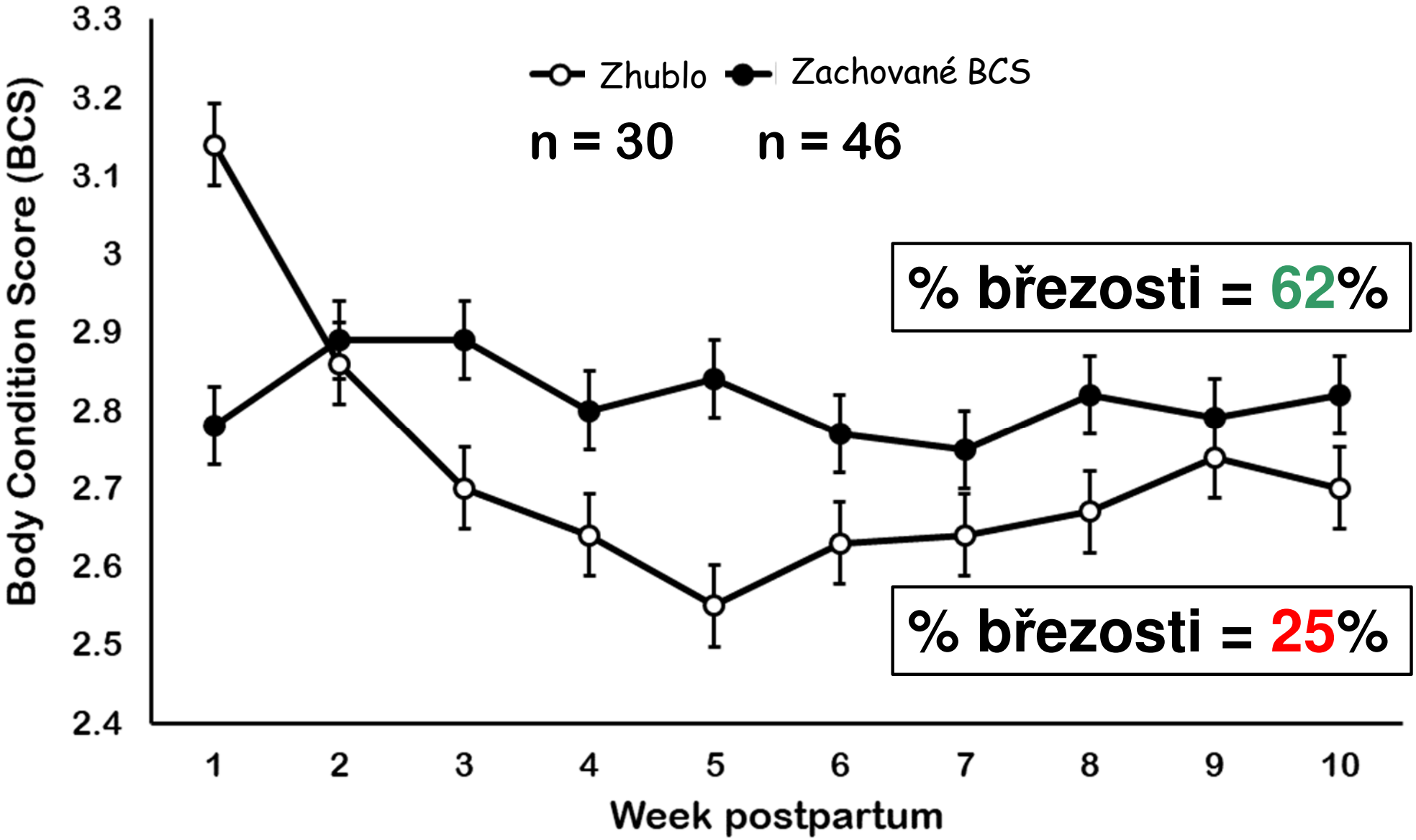
# Jack H. Britt

## AABP 24th Annual Convention, 1992



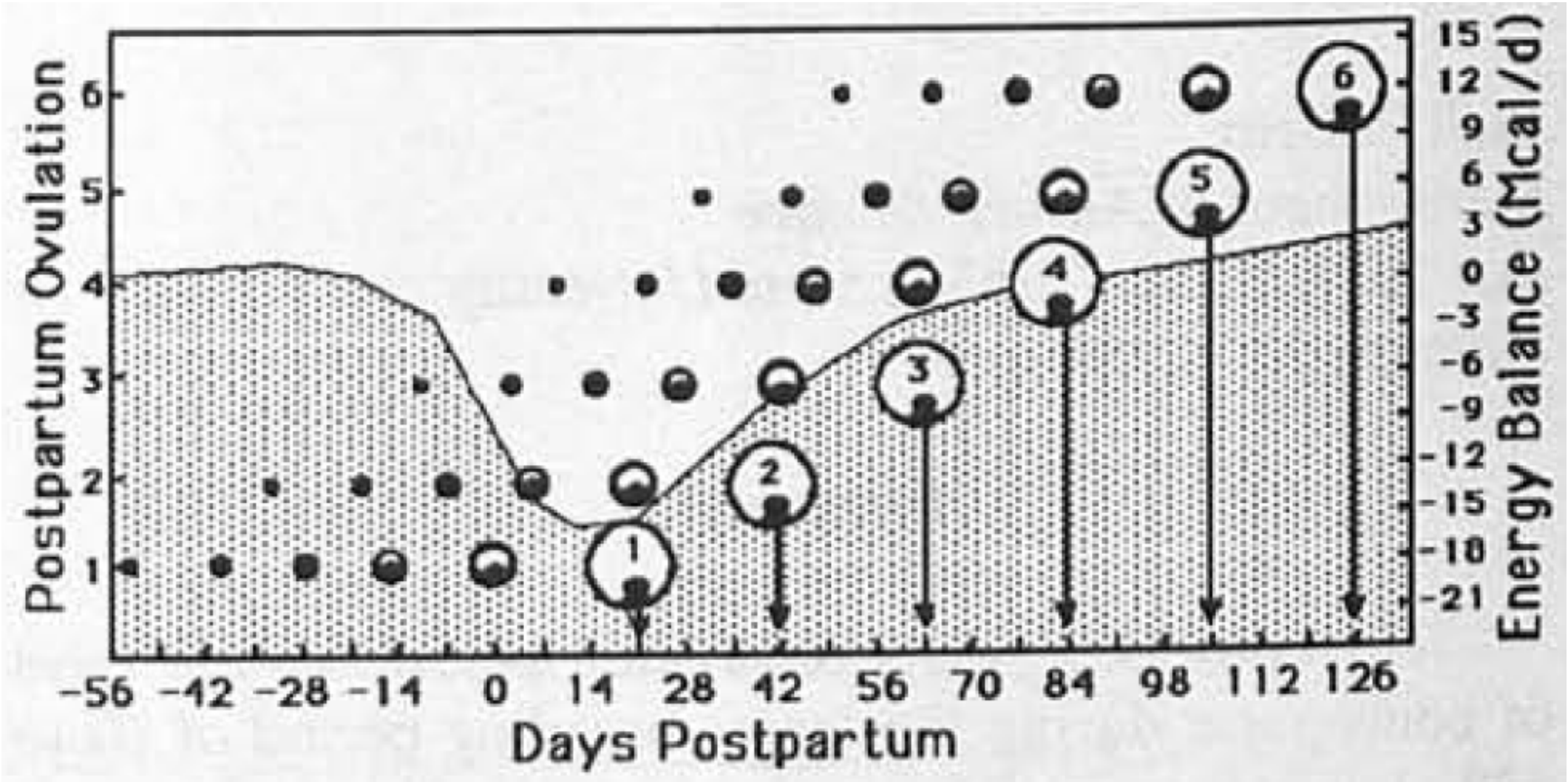
# Jack H. Britt

## AABP 24th Annual Convention, 1992



# Jack H. Britt

## AABP 24th Annual Convention, 1992



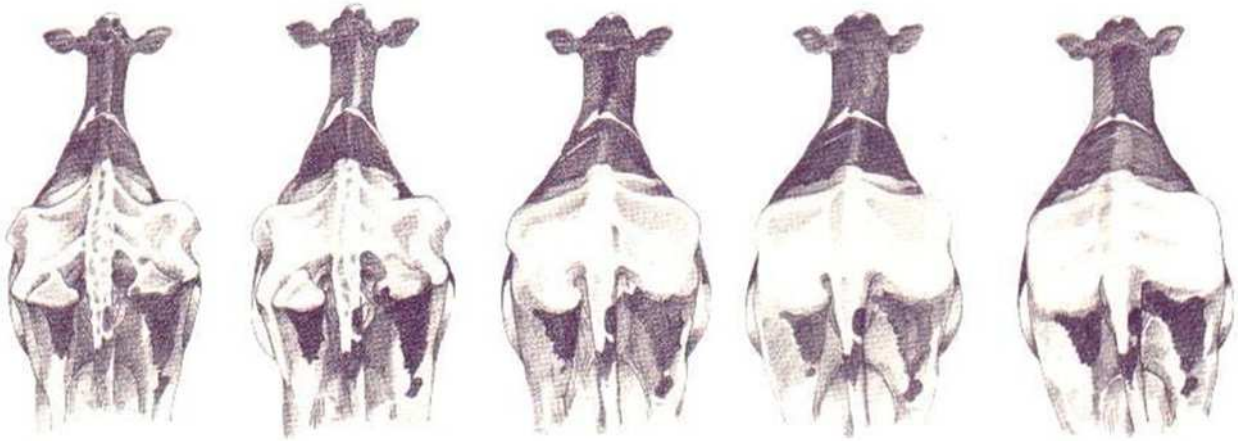

## “Brittova hypotéza”

J. Dairy Sci. 97:3666–3683
http://dx.doi.org/10.3168/jds.2013-7809


# Relationships between fertility and postpartum changes in body condition and body weight in lactating dairy cows

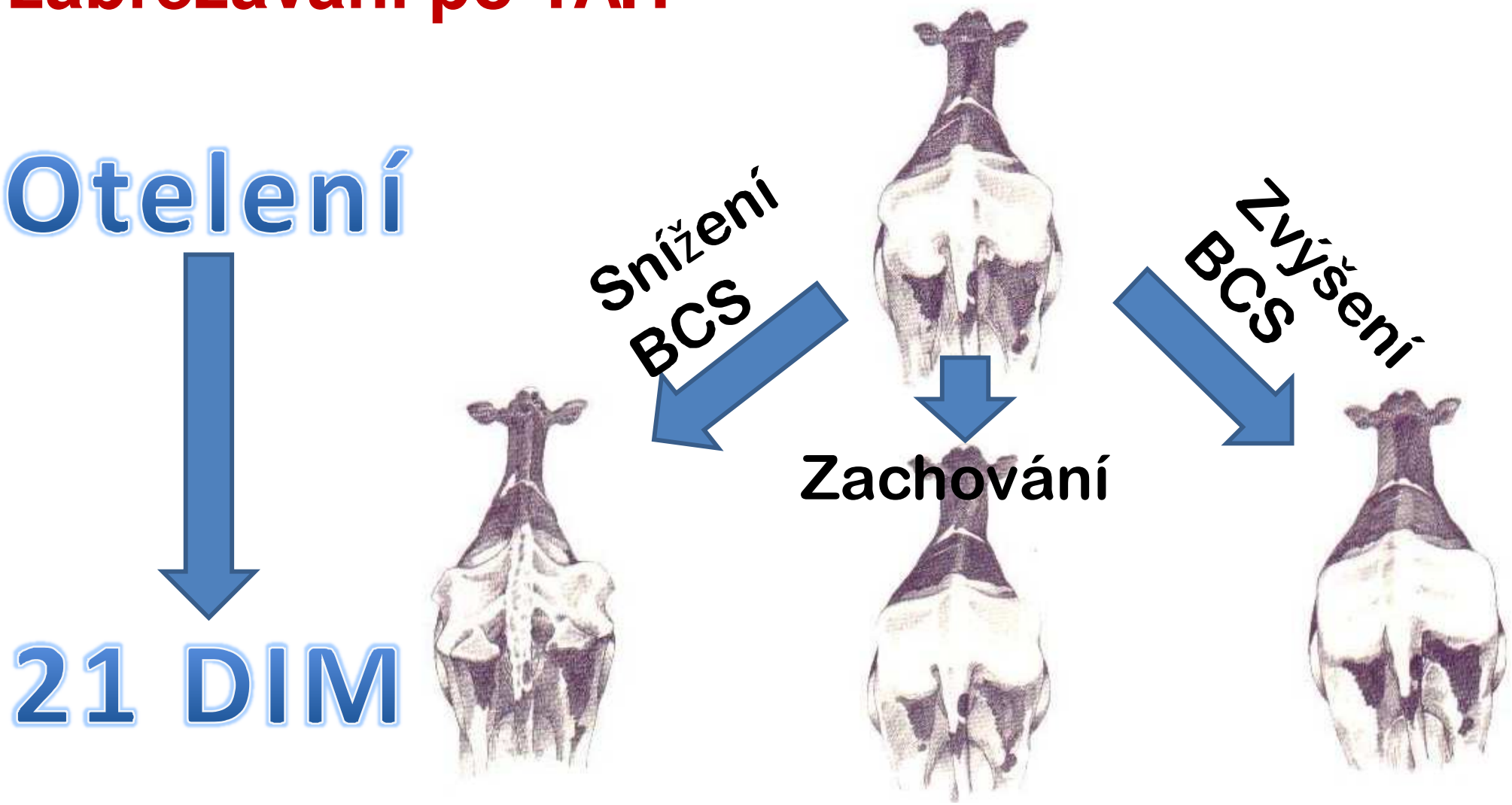
**P. D. Carvalho,* A. H. Souza,*[1] M. C. Amundson,* K. S. Hackbart,* M. J. Fuenzalida,* M. M. Herlihy,* H. Ayres,* A. R. Dresch,* L. M. Vieira,* J. N. Guenther,* R. R. Grummer,† P. M. Fricke,* R. D. Shaver,* and M. C. Wiltbank*[2]**

*Department of Dairy Science, University of Wisconsin-Madison, Madison 53706
†Balchem Corporation, New Hampton, NY 10958



DEPARTMENT OF
DAIRY SCIENCE
University of Wisconsin-Madison

# Ovlivňuje změna BCS časně po porodu zabřezávání po TAI?



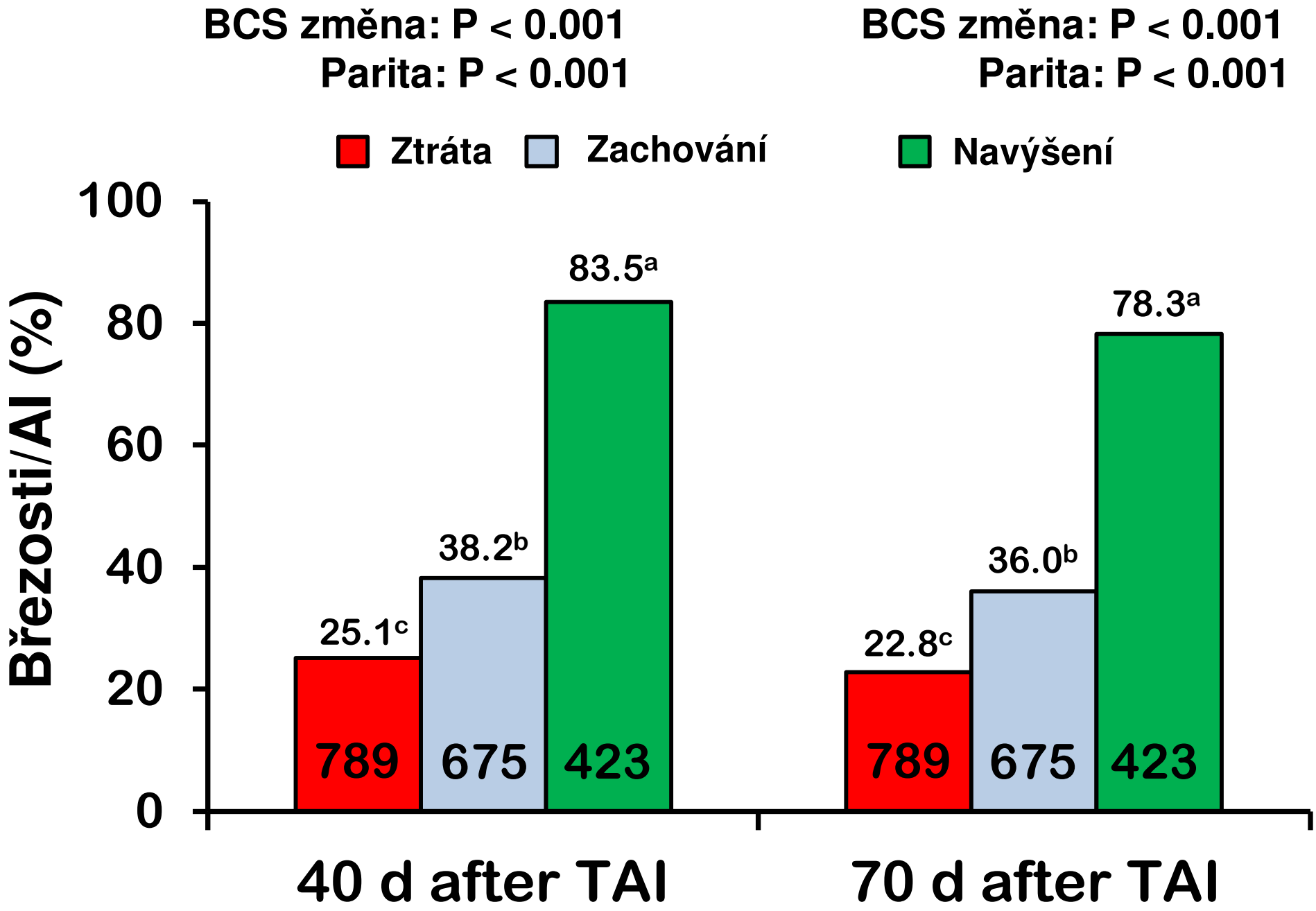

**Krávy se snižujícím se BCS po porodu budou mít zhoršené zabřezávání na 1. TAI**

# % krav, BCS v době telení a 21 DIM

| | Změna BCS | | | P-hodnota |
|---|---|---|---|---|
| | Ztráta | Zachování | Zvýšení | BCS |
| % krav | 42 (789/1887) | 36 (675/1887) | 22 (423/1887) | - |
| % Primi. | 47 (373/789) | 53 (356/675) | 55 (233/423) | 0.02 |
| BCS při otelení | 2.93±0.01$^{a}$ | 2.89±0.02$^{ab}$ | 2.85±0.02$^{b}$ | 0.005 |
| BCS 21 DIM | 2.64±0.01$^{c}$ | 2.89±0.02$^{b}$ | 3.10±0.02$^{a}$ | <0.001 |
| BCS Δ | -0.29 | 0.0 | +0.25 | |
| ECM (kg/d)[1] | 30.9±0.4 | 31.5±0.4 | 28.7±0.4 | 0.3 |

[1]Od otelení do 21DIM

# Březost/AI po Double-Ovsynch



# Případová studie, extrémní příklad

**Výživář mě zavolal ke zhruba 450 hlavému stádu s těžkými reprodukčními problémy**

- **21denní pregnancy rate: 8 %**
  - **<20 % = špatné**
  - **21 % to 25 % = OK s prostorem pro zlepšení**
  - **26 % to 30 % = výborný**
  - **>30 % = vynikající**
- **21 denní % vhodných k inseminaci: 33 %**
  - **Cíl: >60 %**
- **% březosti: 39 % celkově**
  - **Sexované semeno se u krav nepoužívá**
  - **% březosti je těžké porovnávat; zahrnuje spoustu faktorů**
  - **Cíl: 45 % až 55 %**

# Dlouho zasušené krávy

# Časná laktace

# Otázka:

**Jak to udělat, aby krávy po porodu zvýšily BCS?**

Theriogenology 104 (2017) 30–36

Contents lists available at ScienceDirect

Theriogenology

journal homepage: www.theriojournal.com

# Association of changes among body condition score during the transition period with NEFA and BHBA concentrations, milk production, fertility, and health of Holstein cows

R.V. Barletta [a, *], M. Maturana Filho [b], P.D. Carvalho [a], T.A. Del Valle [b], A.S. Netto [b], F.P. Rennó [b], R.D. Mingoti [b], J.R. Gandra [d], G.B. Mourão [c], P.M. Fricke [a], R. Sartori [c], E.H. Madureira [b], M.C. Wiltbank [a]

[a] Department of Dairy Science, University of Wisconsin-Madison, Madison, 53706, USA
[b] Department of Animal Nutrition and Production, University of São Paulo, Pirassununga, 13635-900, Brazil
[c] Department of Animal Science, University of São Paulo, Escola Superior de Agricultura Luiz de Queiroz, Piracicaba, 13418-900, Brazil
[d] College of Agricultural Science, Federal University of Dourados, Dourados, 79804-970, Brazil

**Změna BCS v termínu 21 dní před otelením až 21 dní po otelení**

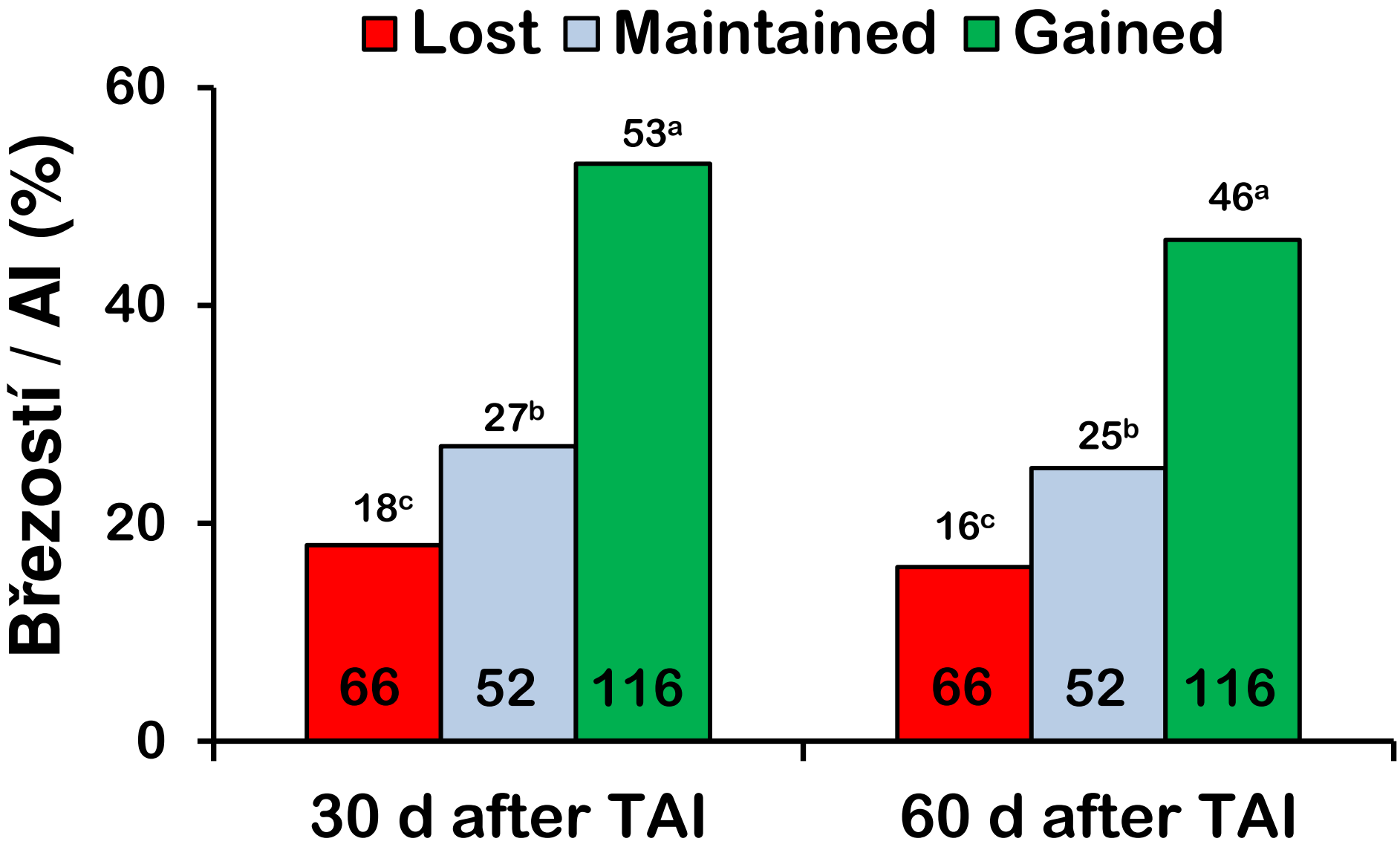
# Vliv změny BCS na zdravotní stav

Barletta et al., 2017; Theriogenology 104:30-36.

| Událost | Ztráta | Zachování | Navýšení |
|---|---|---|---|
| | 50% (116/234) | 22% (52/234) | 28% (66/234) |
| Metritis | 23% | 21% | 20% |
| Mastitis | 29%[b] | 17%[a,b] | 17%[a] |
| Ketosis | 27% | 19% | 15% |
| Pneumonia | 15% | 12% | 9% |
| >1 událost | 63%[b] | 46%[a] | 39%[a] |

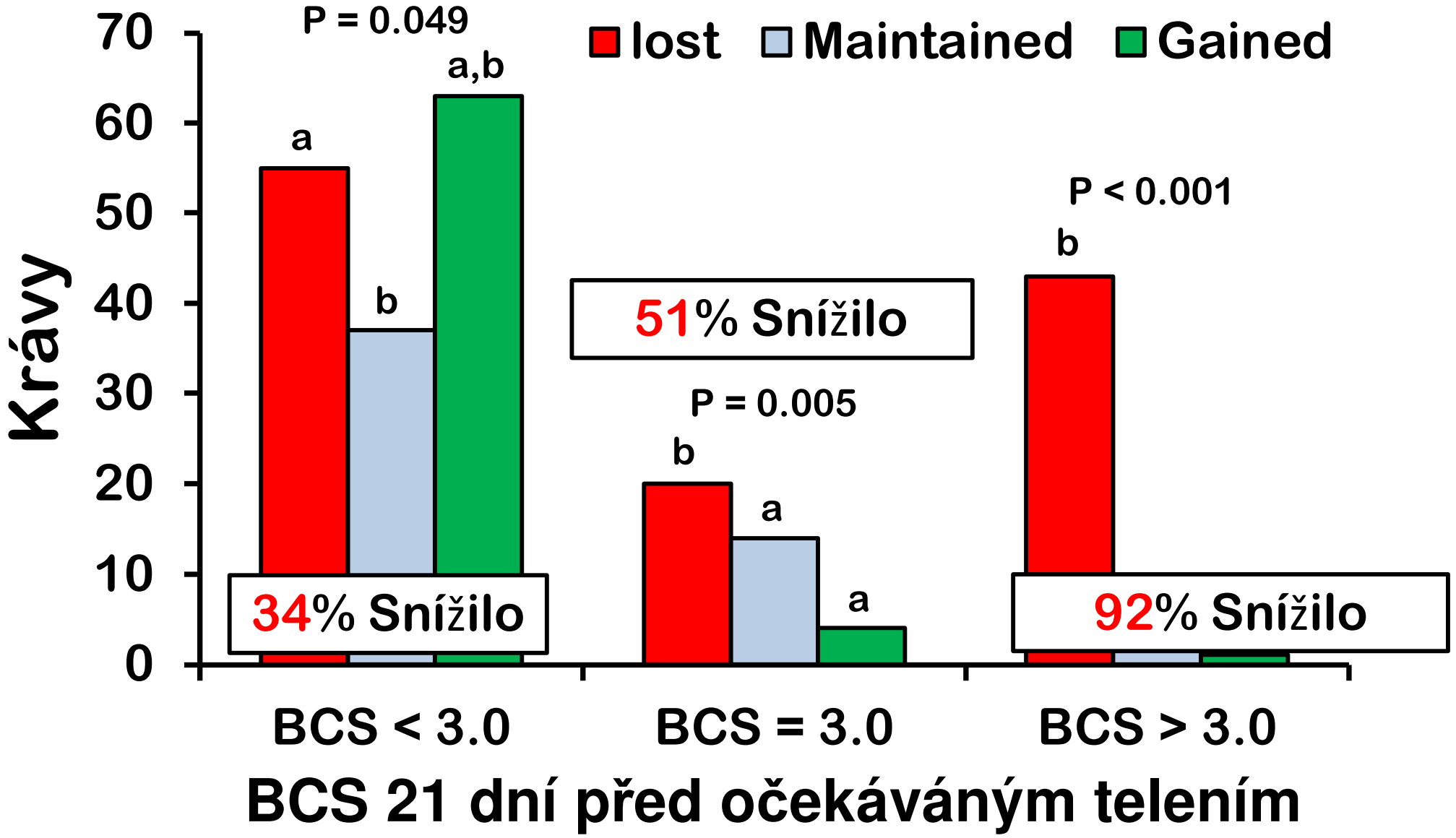
# P/AI na TAI po reprodukčním programu

Barletta et al., 2017; Theriogenology 104:30-36



# Celkově snížilo BCS 50 % krav mezi 21 před až 21 dní po otelení

Barletta et al., 2017; Theriogenology 104:30-36



# Otázka:

**Jak můžeme u krav zvýšit po porodu BCS??**

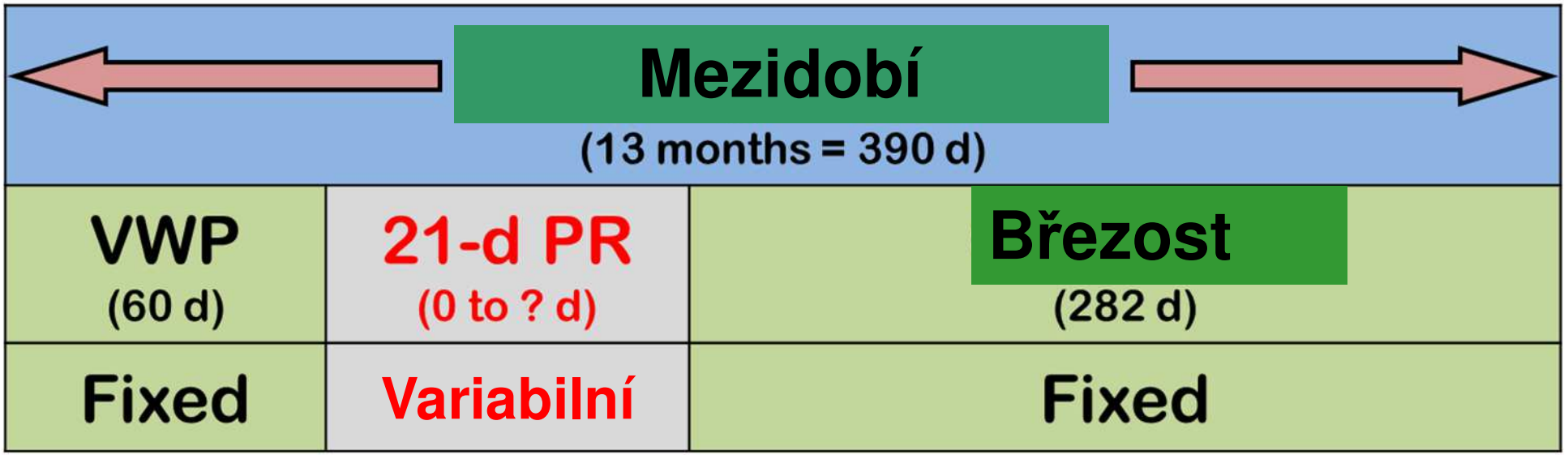
# Odpověď:

**Vyhněte se telení tustých krav!**

J. Dairy Sci. 102:5577–5587
https://doi.org/10.3168/jds.2018-15828


# The high-fertility cycle: How timely pregnancies in one lactation may lead to less body condition loss, fewer health issues, greater fertility, and reduced early pregnancy losses in the next lactation

**E. L. Middleton, T. Minela, and J. R. Pursley***
Department of Animal Science, Michigan State University, East Lansing 48824

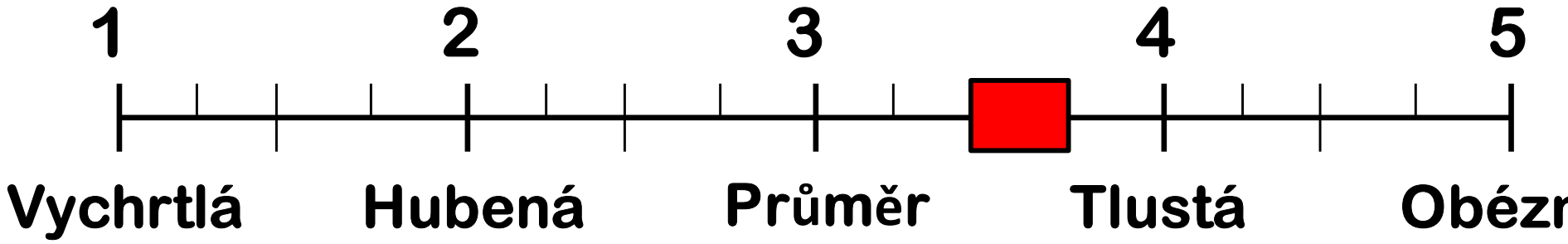


# Znovu promyslet cíl BCS

## 2001 BCS doporučení:

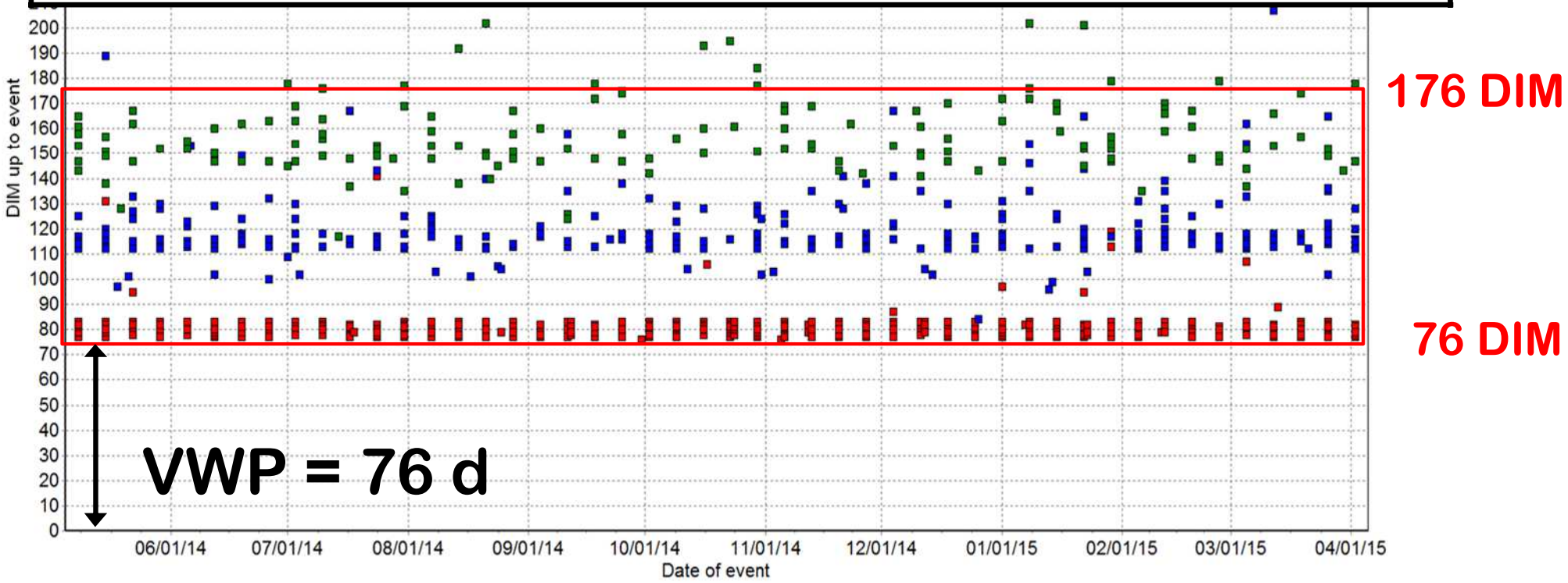
Otelení: 3.25 to 3.75
Časné: 2.50 to 3.25
Střední: 2.75 to 3.25
Pozdní: 3.00 to 3.50
Zasušení: 3.25 to 3.75

**Příliš vysoké!**

# Používejte reprodukční programy

| Parita | 21-d Preg Rate | % březosti | P/AI |
|---|---|---|---|
| Všechny krávy | 31% | 66% | 50% |
| Prvotelky | 41% | 70% | 61% |
| Ostatní | 29% | 65% | 47% |



# BREDSUM By Times Bred

## January, 2019 to January, 2020

| | 95% CI | %Conc | #Preg | #Open | Other | Abort | Total | %Tot | SPC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 46-55 | 50 | 269 | 266 | 5 | 35 | 540 | 49 | 2.0 |
| 2 | 47-58 | 53 | 153 | 137 | 4 | 13 | 294 | 27 | 1.9 |
| 3 | 42-58 | 50 | 75 | 75 | 1 | 6 | 151 | 14 | 2.0 |
| 4 | 34-57 | 46 | 31 | 37 | 1 | 2 | 69 | 6 | 2.2 |
| 5 | 21-54 | 36 | 10 | 18 | 0 | 1 | 28 | 3 | 2.8 |
| 6 | - | 62 | 10 | 6 | 0 | 0 | 16 | 1 | 1.6 |
| 7 | - | 50 | 1 | 1 | 0 | 0 | 2 | 0 | 2.0 |
| 8 | - | 100 | 1 | 0 | 0 | 0 | 1 | 0 | 1.0 |
| TOTALS | 47-53 | 50 | 550 | 540 | 11 | 57 | 1101 | 100 | 2.0 |

**90%**
**březích**
**po 3 AI**

# Hierarchie reprodukčních potřeb dle Dr. Frickeho

# Zvážit nebo počkat? Jak definice způsobilosti chovu jalovic ovlivňuje produkci mléka při první laktaci

**M. R. Lauber**

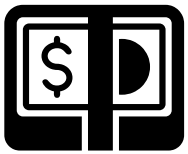
**and**

**P. M. Fricke**

ANIMAL & DAIRY SCIENCES
University of Wisconsin-Madison

# Chov jalovic je nákladný

Akins and Hagedorn, 2015

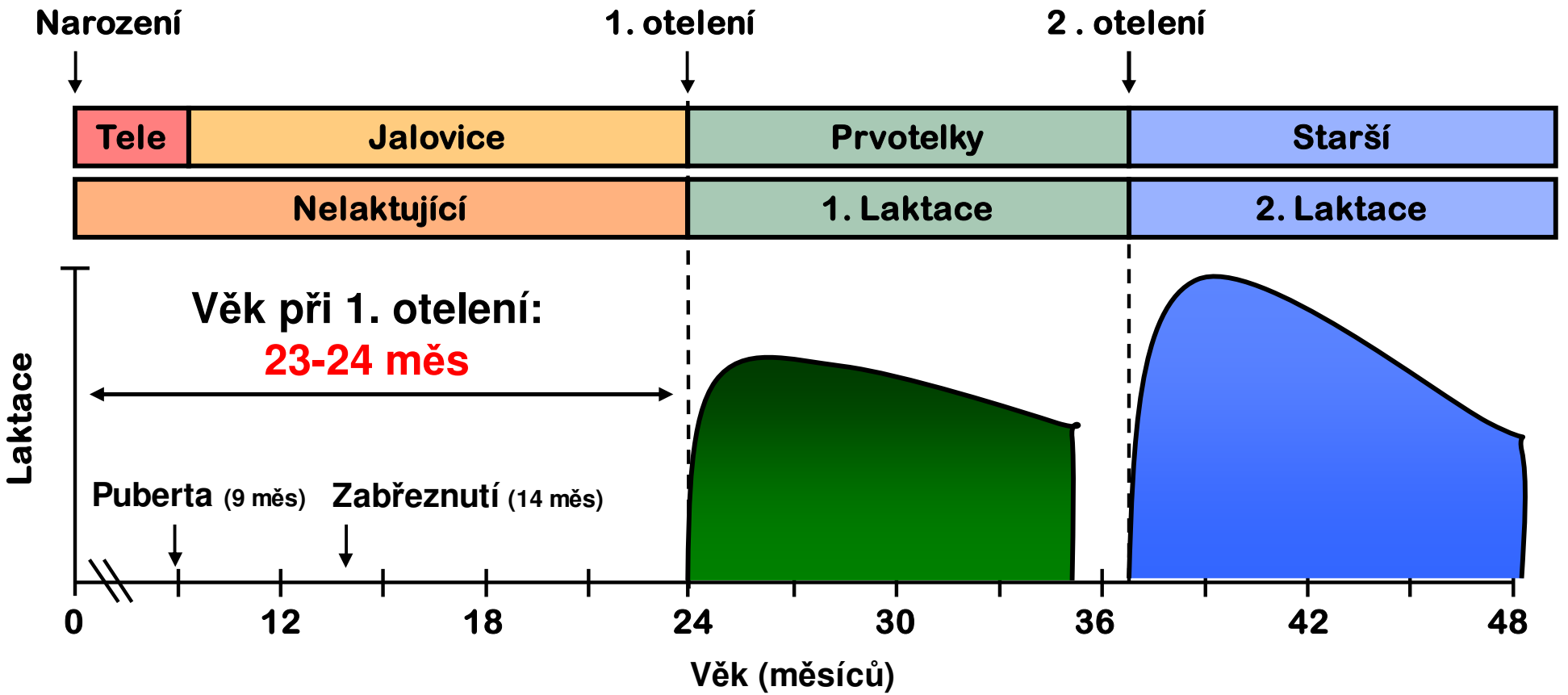


**$2,500**

**50% celkových nákladů na chov**

- **Věk při prvním otelení se v U.S. snižuje a dosahuje 24.5 ± 2.7 měsíců (Hutchinson et al., 2017)**
- **Nejlepší ekonomická návratnost od 23 to 24 měsíců (Ettema and Santos, 2004)**

# Chov jalovic




**Hmotnost v dospělosti (MBW) = váha krav na 3. a vyšší laktaci (680 kg)**

**MBW cíle:**

**55% MBW během první AI = 374 kg**

**85% MBW po otelení = 578 kg**

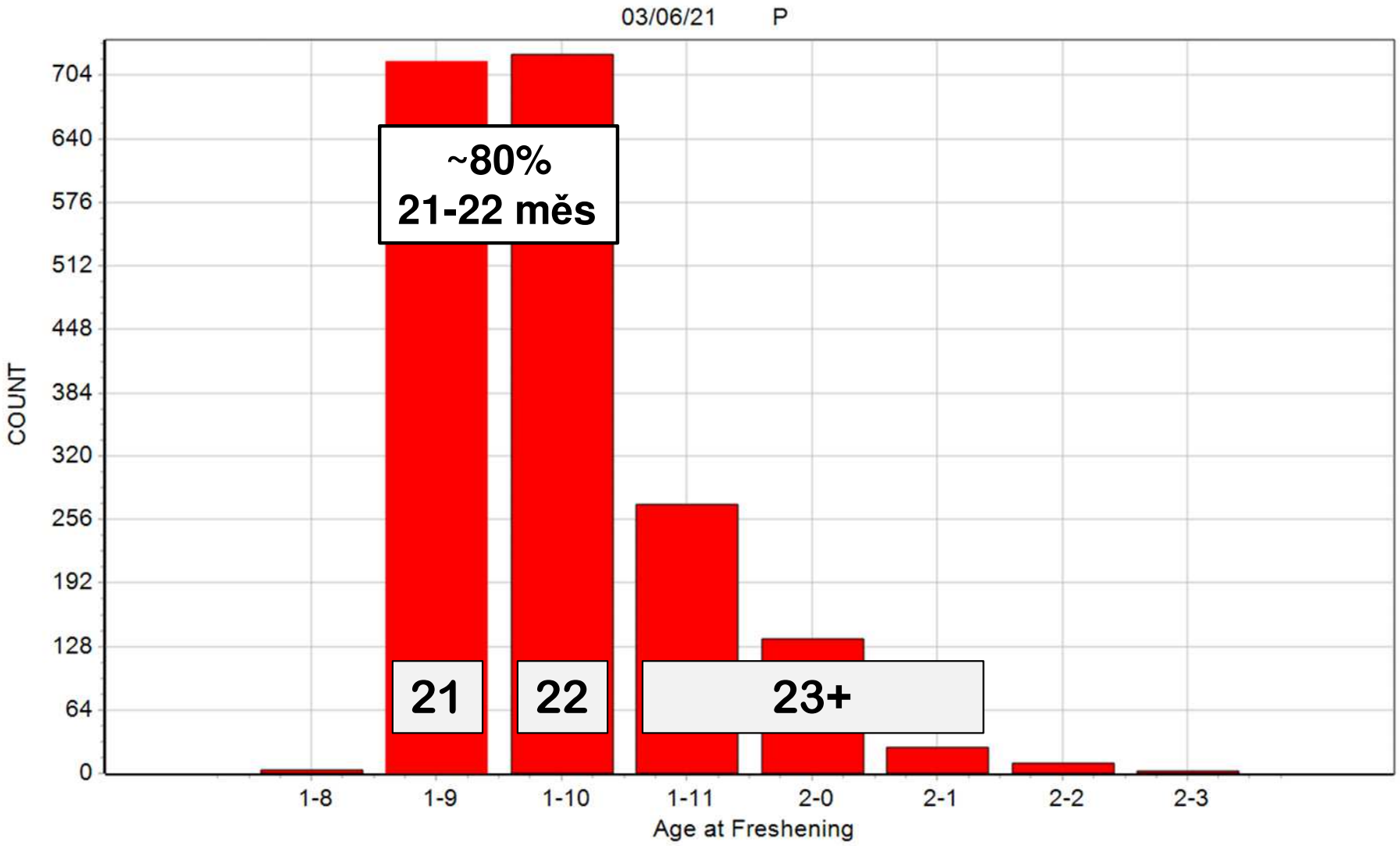
# Cíl

**Určit vztah mezi váhou a věkem při 1. otelení a mléčnou produkcí během 1. laktace u holštýnských krav**

# Analýza dat

- Data získána z 305 denních laktací od holštýnské farmy dojící ~7,000 krav
- Načasování inseminace jalovic založeno primárně na věku
- Jalovice s délkou březosti <250 a >300 dní vyjmuty z analýzy
- % hmotnosti v dospělosti (%MBW) bylo určeno vážením krav na 3. a 4. laktaci (n = 75) v období 30 až 40 dnů laktace
- Krávy na první laktaci byly váženy 30 dní p.p. a a rozděleny na čtvrtiny na základě hmotnosti
- BRD případy byly zahrnuty

# GRAPH AGEFR FOR LACT=1



# Hmotnost 30 dní p.p., hmotnost v dospělosti a věk při 1. otelení

| | Čtvrtiny dle hmotnosti | | | |
|---|---|---|---|---|
| | Q1<br>n = 462 | Q2<br>n = 456 | Q3<br>n = 472 | Q4<br>n = 459 |
| Hmotnost 30 dní p.p. | $512.4^{a} \pm 0.81$ | $552.6^{b} \pm 0.82$ | $583.3^{c} \pm 0.80$ | $630.7^{d} \pm 0.81$ |
| Hmotnost v dospělosti (%)[1] | $74.7^{a} \pm 0.001$ | $80.5^{b} \pm 0.001$ | $85.0^{c} \pm 0.001$ | $91.9^{d} \pm 0.001$ |
| Věk při 1. otel. (dní) | $674.6^{a} \pm 1.25$ | $681.8^{b} \pm 1.25$ | $688.2^{c} \pm 1.24$ | $694.6^{d} \pm 1.25$ |

[a-d] Within a row, means with different superscripts differ (P<0.05)

[1]Procento váhy dospělé (%MBW) bylo vypočítáno jako váhy prvotelek ve 30 dnech laktace dělená váhou dospělé stáda( MBW) 686.4 kg určené jakou průměrná váha náhodného vzorku krav na 3 a 4 laktaci (n = 75) ve  30 až 40 dnech laktace

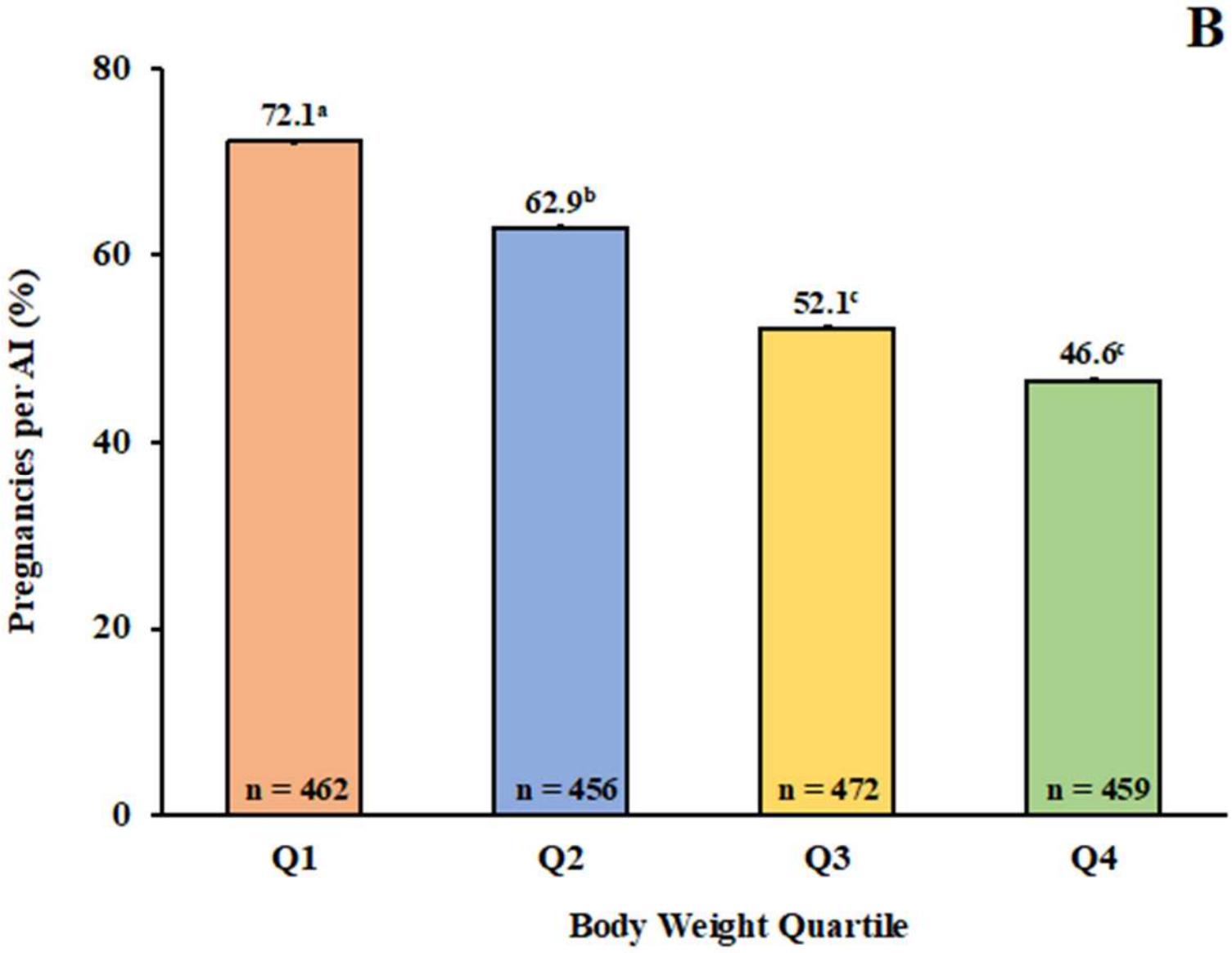
# Předpověď přenášených schopností (PTAs)

| | Čtvrtiny dle hmotnosti | | | |
|---|---|---|---|---|
| | Q1<br>n = 462 | Q2<br>n = 456 | Q3<br>n = 472 | Q4<br>n = 459 |
| PTA Mléko | 173.1$^{b}$ ± 9.8 | 188.6$^{ab}$ ± 9.8 | 179.2$^{b}$ ± 9.7 | 215.0$^{a}$ ± 9.8 |
| PTA Vzrůst | -0.56$^{c}$ ± 0.03 | -0.52$^{bc}$ ± 0.03 | -0.46$^{b}$ ± 0.03 | -0.29$^{a}$ ± 0.03 |
| PTA Uložení krmiva | 31.9$^{a}$ ± 2.0 | 24.6$^{b}$ ± 2.0 | 13.4$^{c}$ ± 2.0 | 5.7$^{d}$ ± 2.0 |
| PTA PL | 2.4$^{a}$ ± 0.04 | 2.2$^{bA}$ ± 0.04 | 2.1$^{bcB}$ ± 0.04 | 1.9$^{d}$ ± 0.04 |
| PTA DPR | 0.37$^{a}$ ± 0.05 | 0.27$^{ab}$ ± 0.05 | 0.26$^{ab}$ ± 0.05 | 0.11$^{b}$ ± 0.05 |
| PTA HCR | 0.03$^{a}$ ± 0.04 | 0.0$^{a}$ ± 0.04 | -0.08$^{ab}$ ± 0.04 | -0.16$^{b}$ ± 0.04 |

$^{a,b}$ Within a row, means with different superscripts differ (P<0.05)

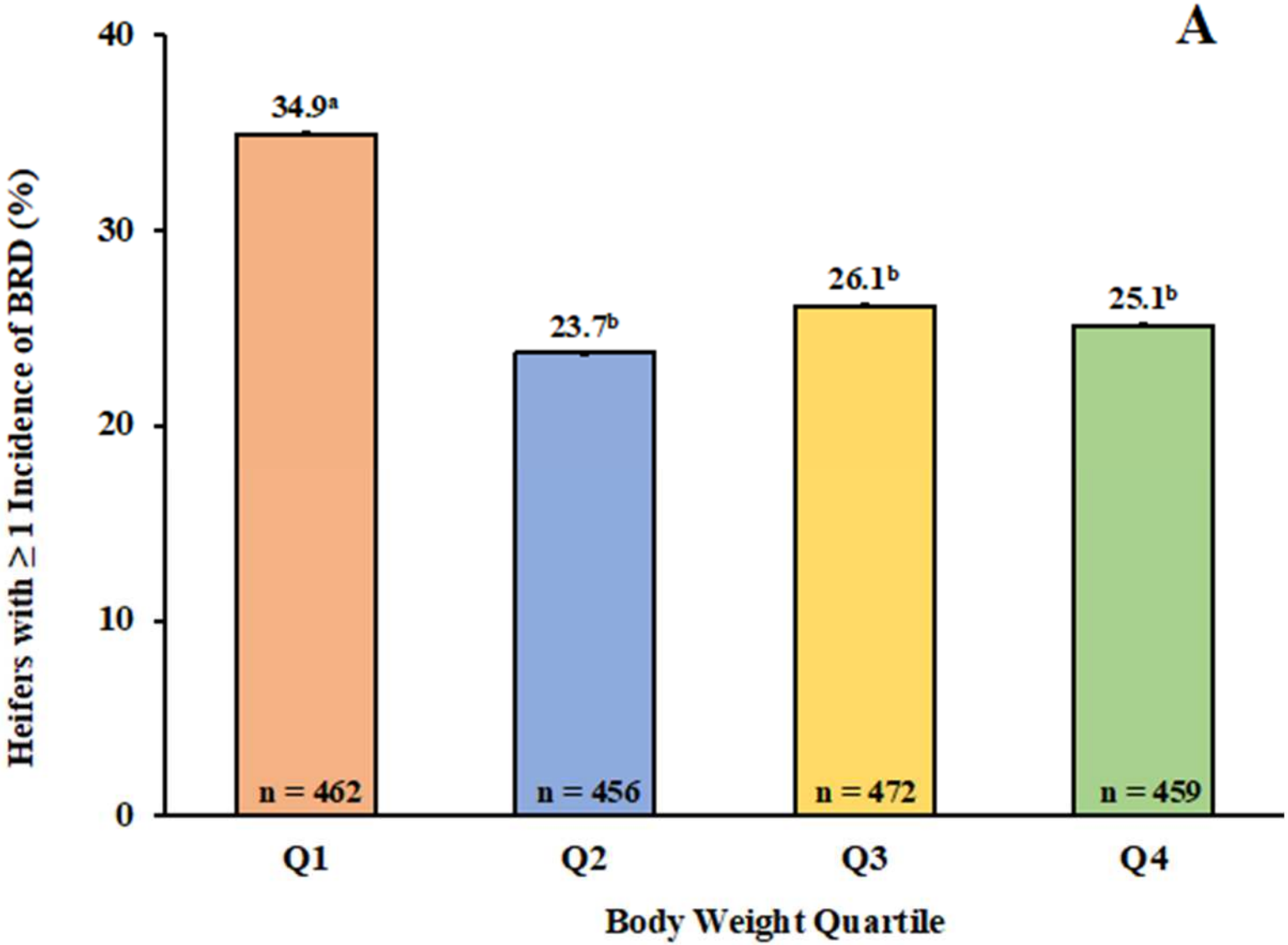
# Březosti při umělé inseminaci

## První inseminace jalovic

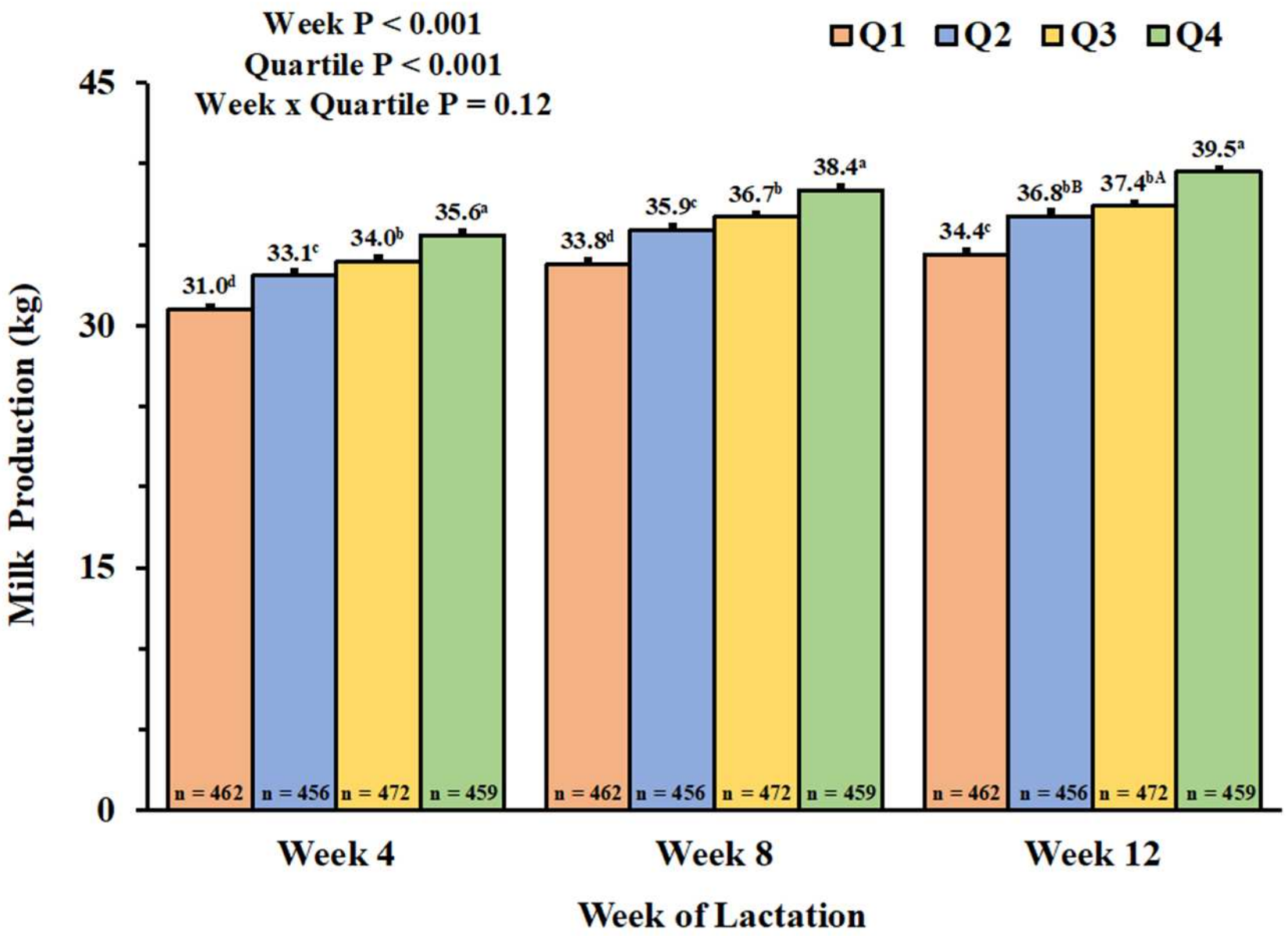


# Respirační syndrom skotu (BRD)

## U jalovic

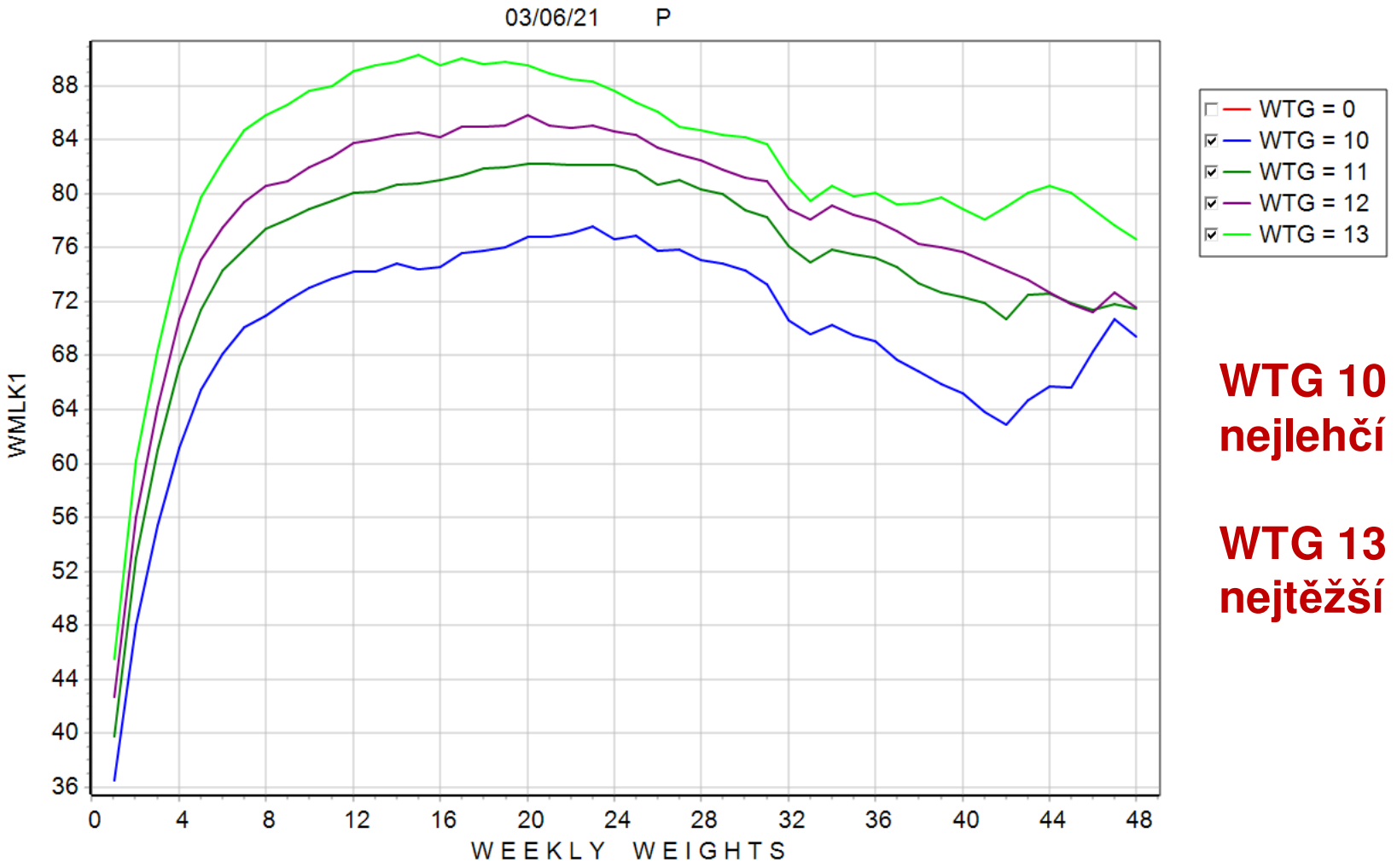


# Produkce mléka




Lauber et al., 2021. J. Dairy Sci. 104(Suppl 1):(270).

# PLOT WMLK1 FOR LCTGP=1 BY WTG

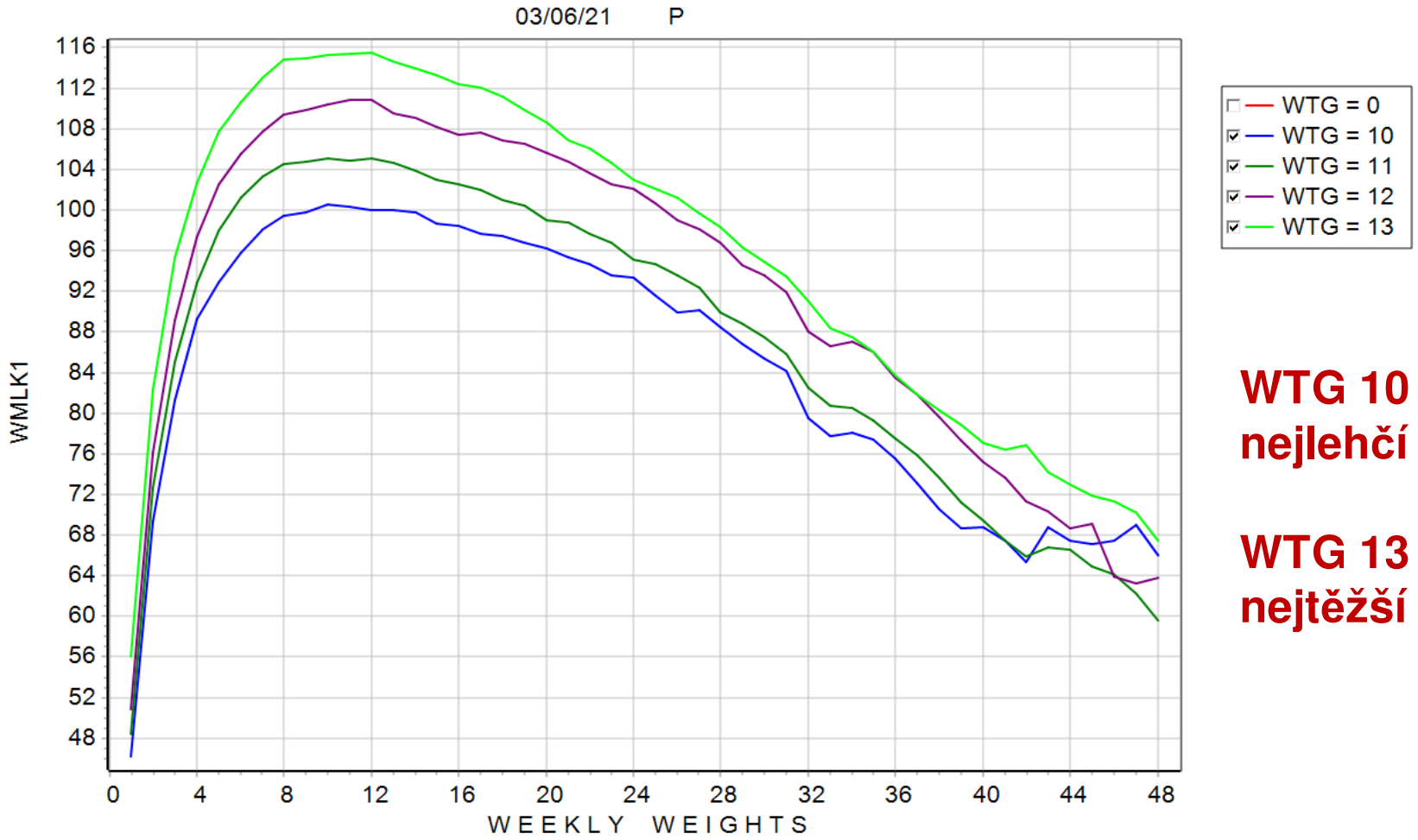



**WTG 10 = nejlehčí**

**WTG 13 = nejtěžší**

**M. R. Lauber**

# PLOT WMLK1 FOR LCTGP=2 BY WTG

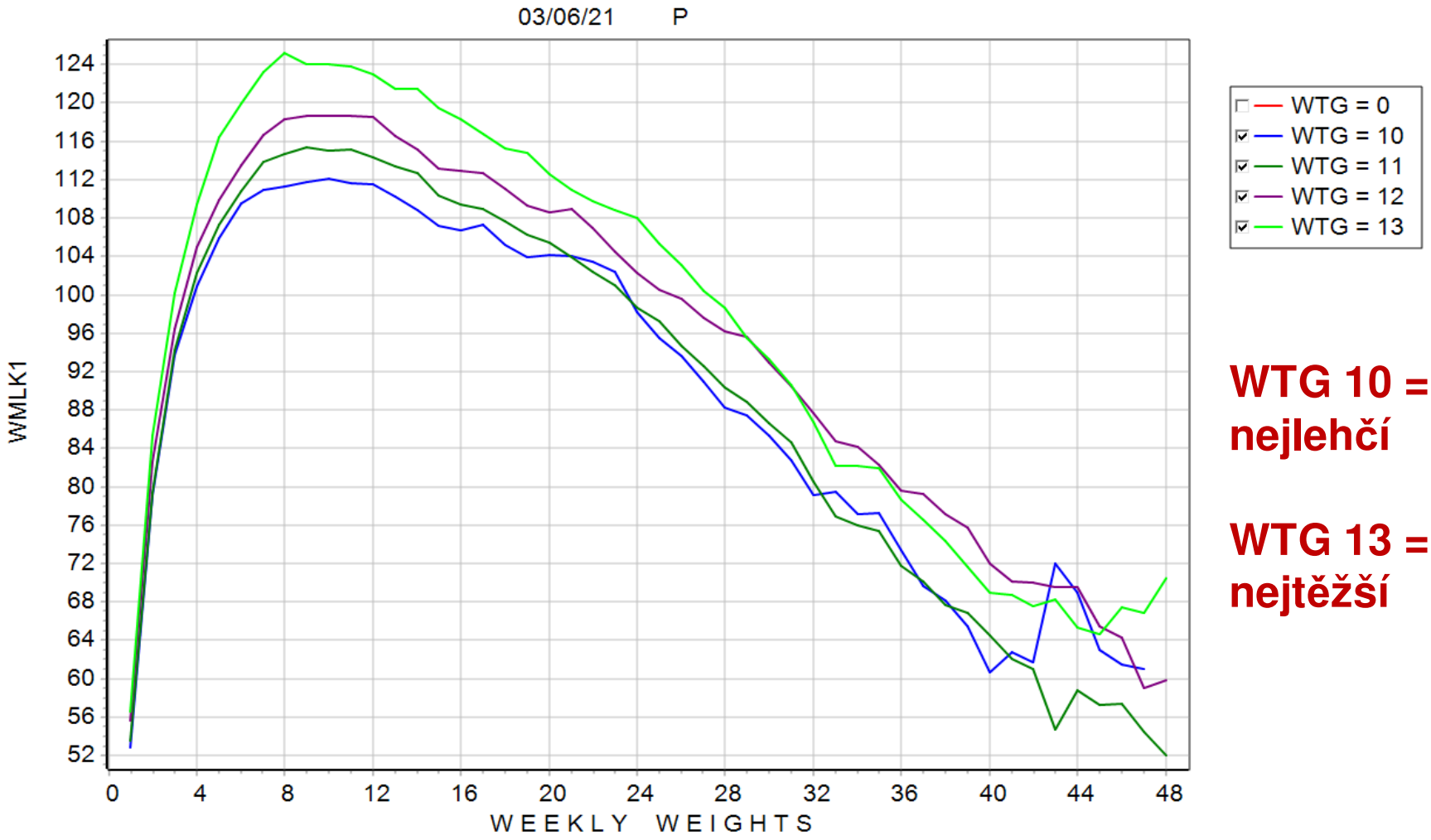



**WTG 10 = nejlehčí**

**WTG 13 = nejtěžší**

**M. R. Lauber**

# PLOT WMLK1 FOR LCTGP=3 BY WTG



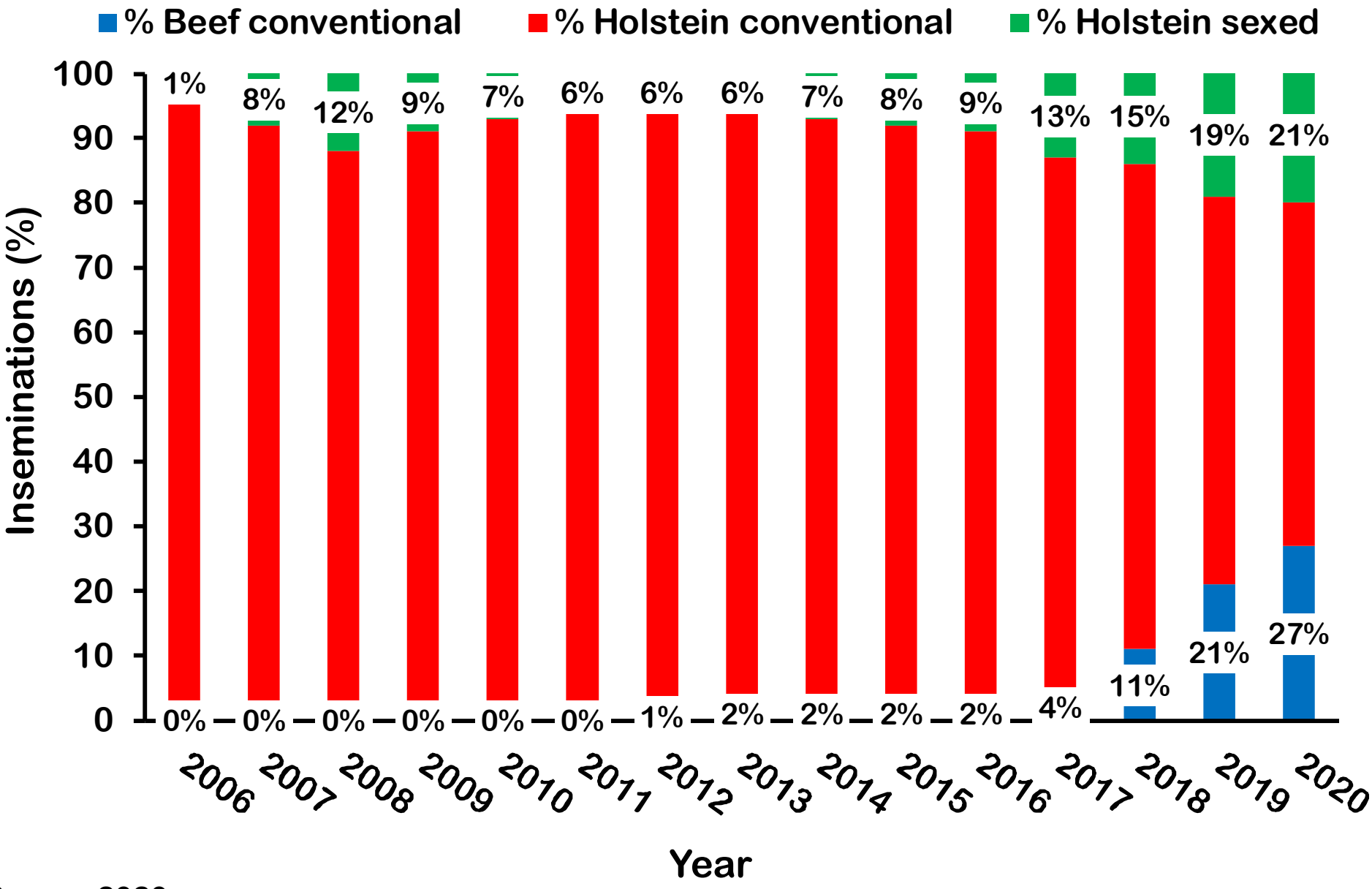

**WTG 10 = nejlehčí**

**WTG 13 = nejtěžší**

**M. R. Lauber**

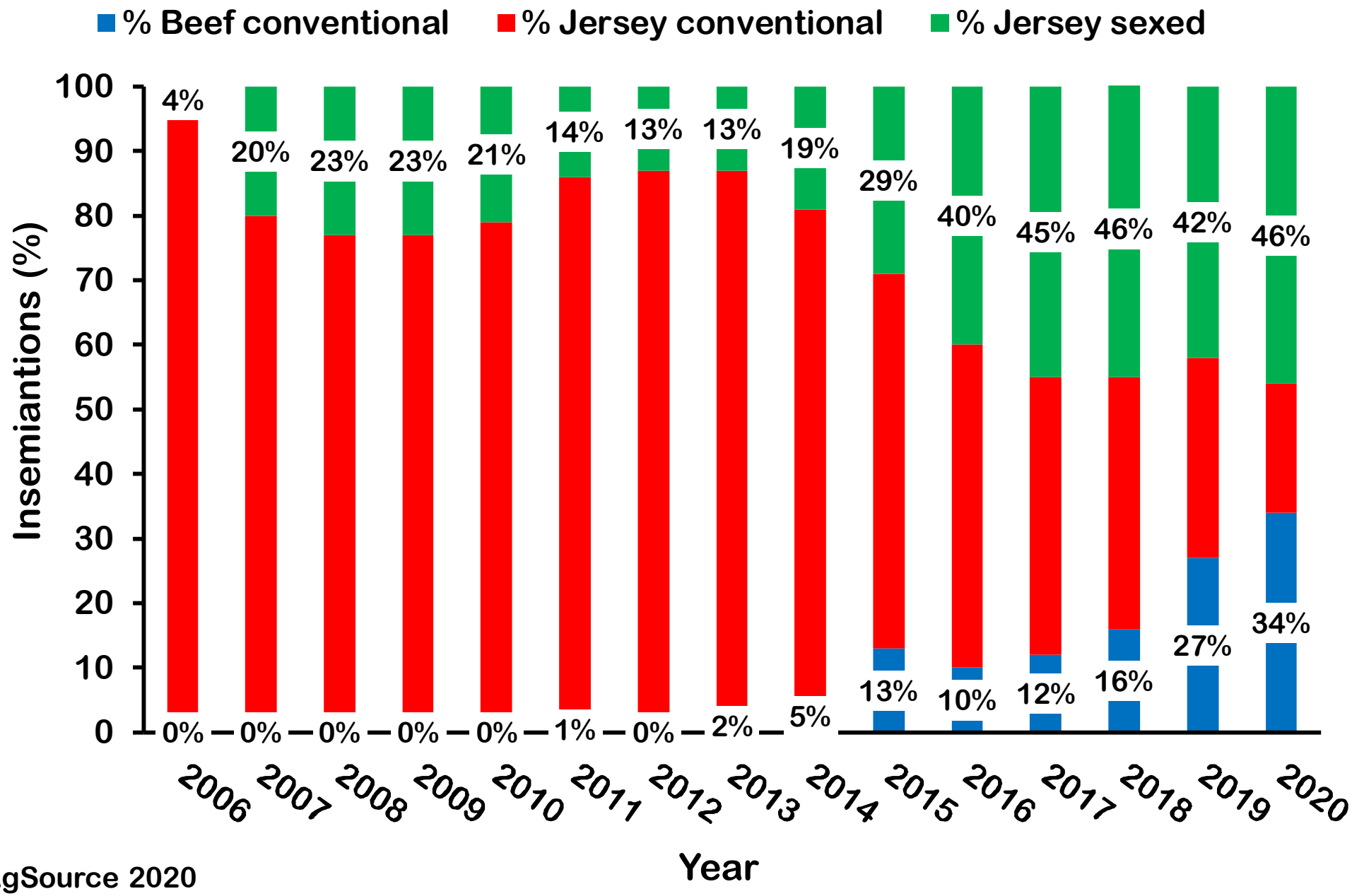
# Hierarchie reprodukčních potřeb dle Dr. Frickeho

# Inseminace u plemene Holštýn




AgSource 2020

# Inseminace u plemene Jersey




AgSource 2020

# Charakterizace prevalence a alokace typu spermatu u plemene Holštýn a Jersey ve Spojených státech

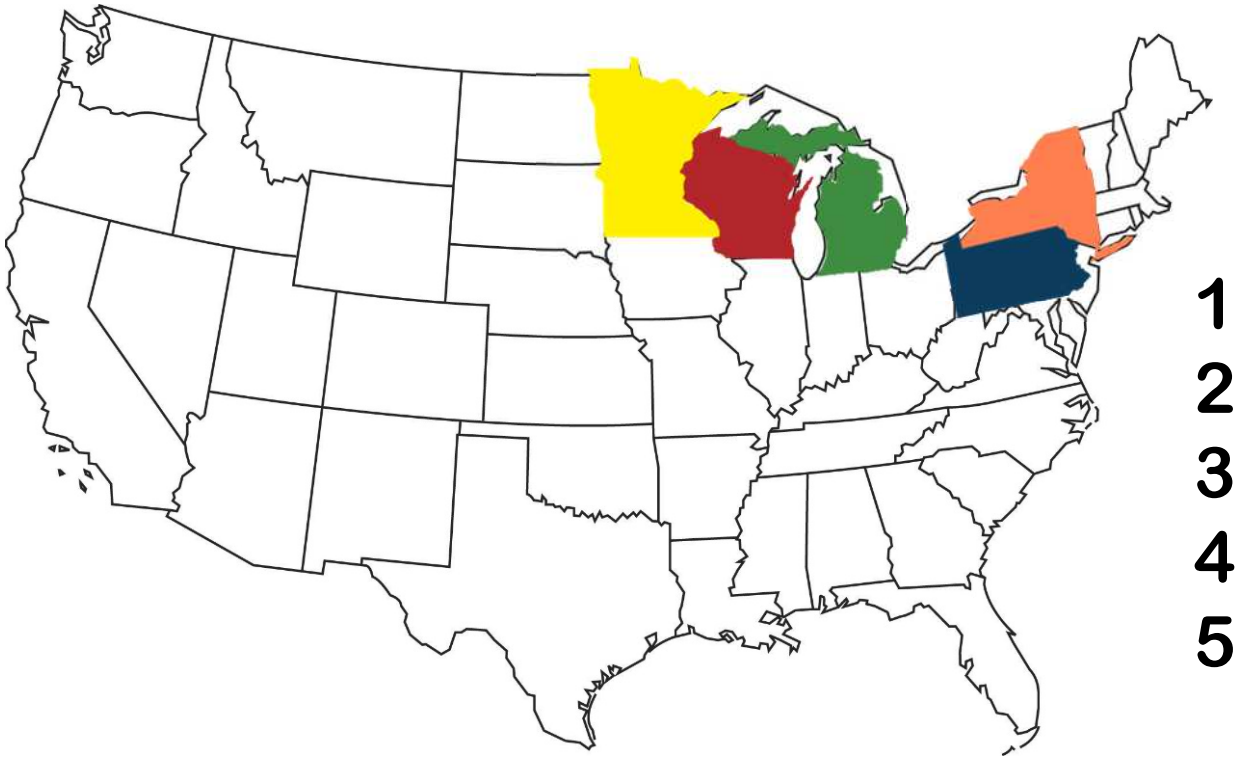
**J. Dairy Sci. 2023 (accepted)**

**M. R. Lauber, F. Peñagaricano, R. H. Fourdraine, J. S. Clay, and P. M. Fricke**


Department of Animal & Dairy Sciences
UNIVERSITY OF WISCONSIN-MADISON

Extension
UNIVERSITY OF WISCONSIN-MADISON

# Zeměpisný region



1. New York: 16.93%
2. Wisconsin: 14.48%
3. Pennsylvania: 13.67%
4. Michigan: 10.12 %
5. Minnesota: 9.08%

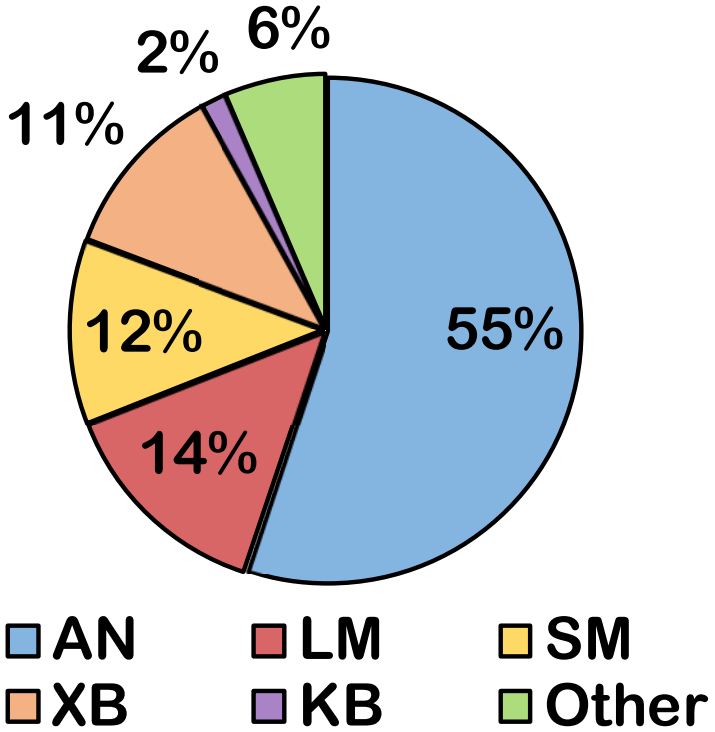
**9.38 milionů dojených krav v U.S. (USDA 2022)**
**~1/3 všech dojených krav v U.S.**

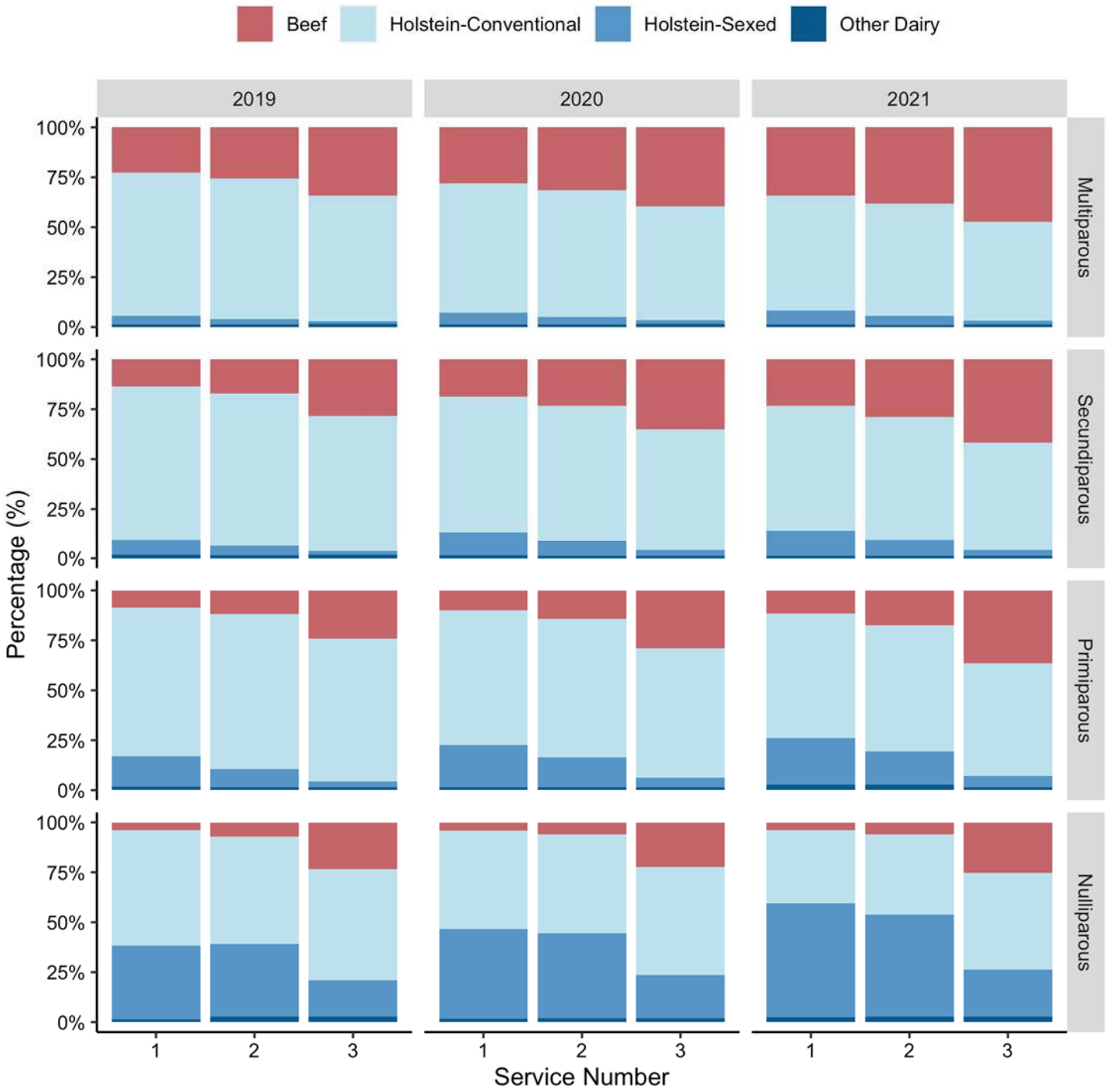
# Plemenní býci

National Association of Animal Breeders

**Konvenční**
**Sexované**

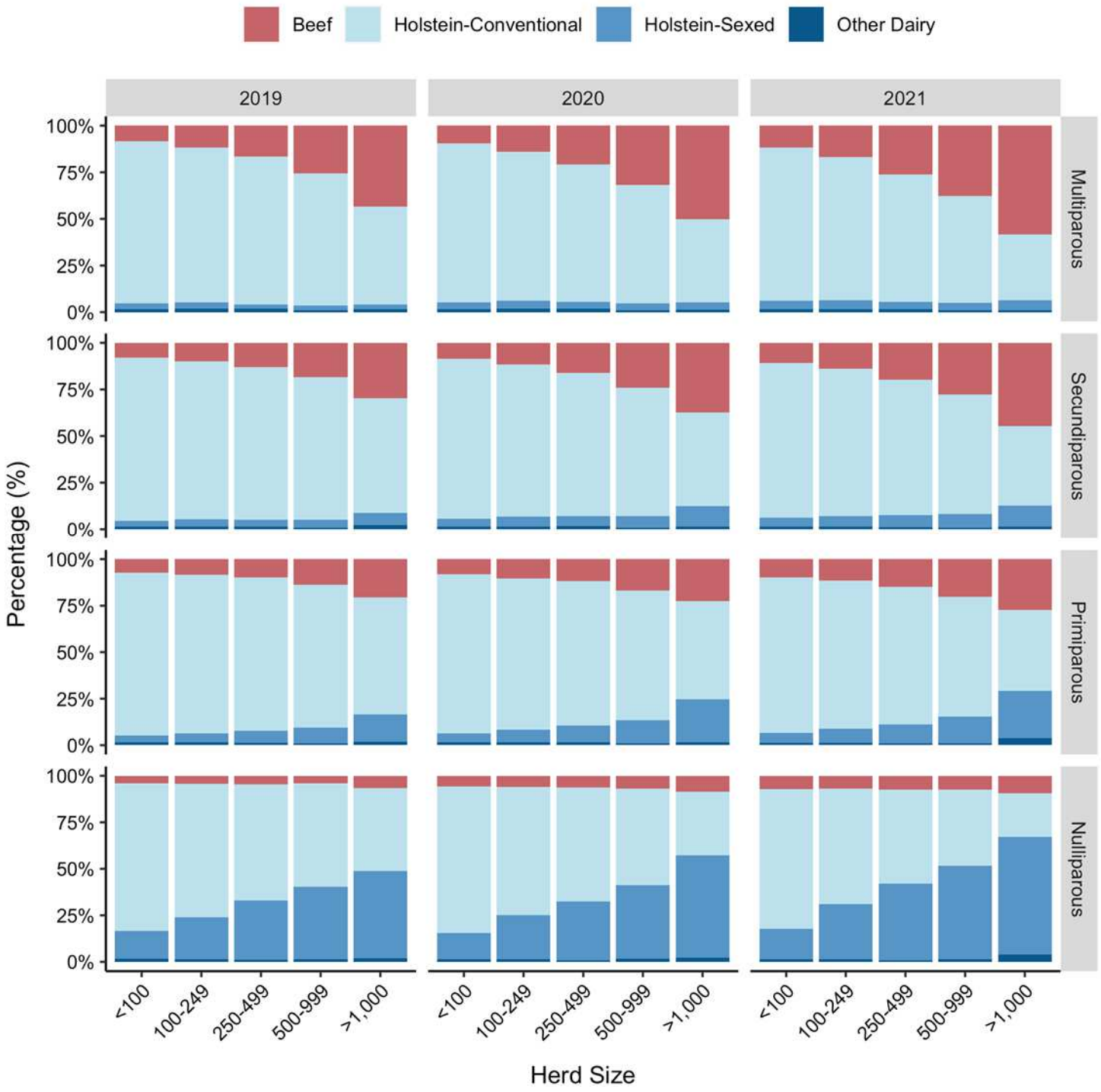
**Další dojené (6 dalších dojených plemen v U.S.)**






**Lauber et al., 2023. Characterization of semen type prevalence and allocation in Holstein and Jersey females in the United States. J. Dairy Sci. 105:(accepted)**

**8,284,770 inseminačních záznamů od 3,115,224 holštýnských samic z 9,196 stád**




**Lauber et al., 2023. Characterization of semen type prevalence and allocation in Holstein and Jersey females in the United States.** J. Dairy Sci. 105:(accepted)

**8,284,770 inseminačních záznamů od 3,115,224 holštýnských samic z 9,196 stád**

DRMS

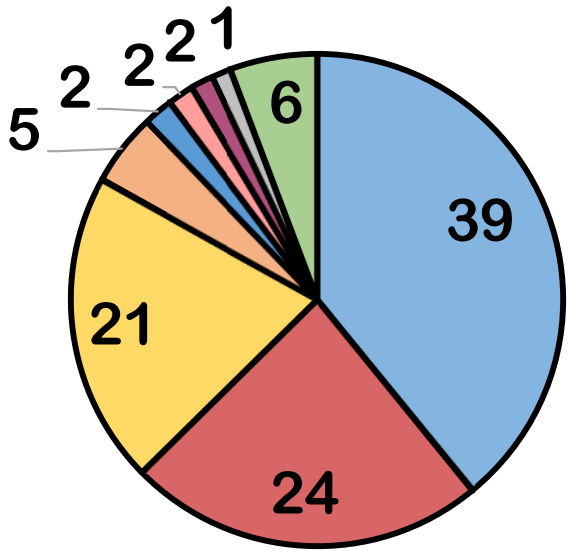
# Service Sires

National Association of Animal Breeders

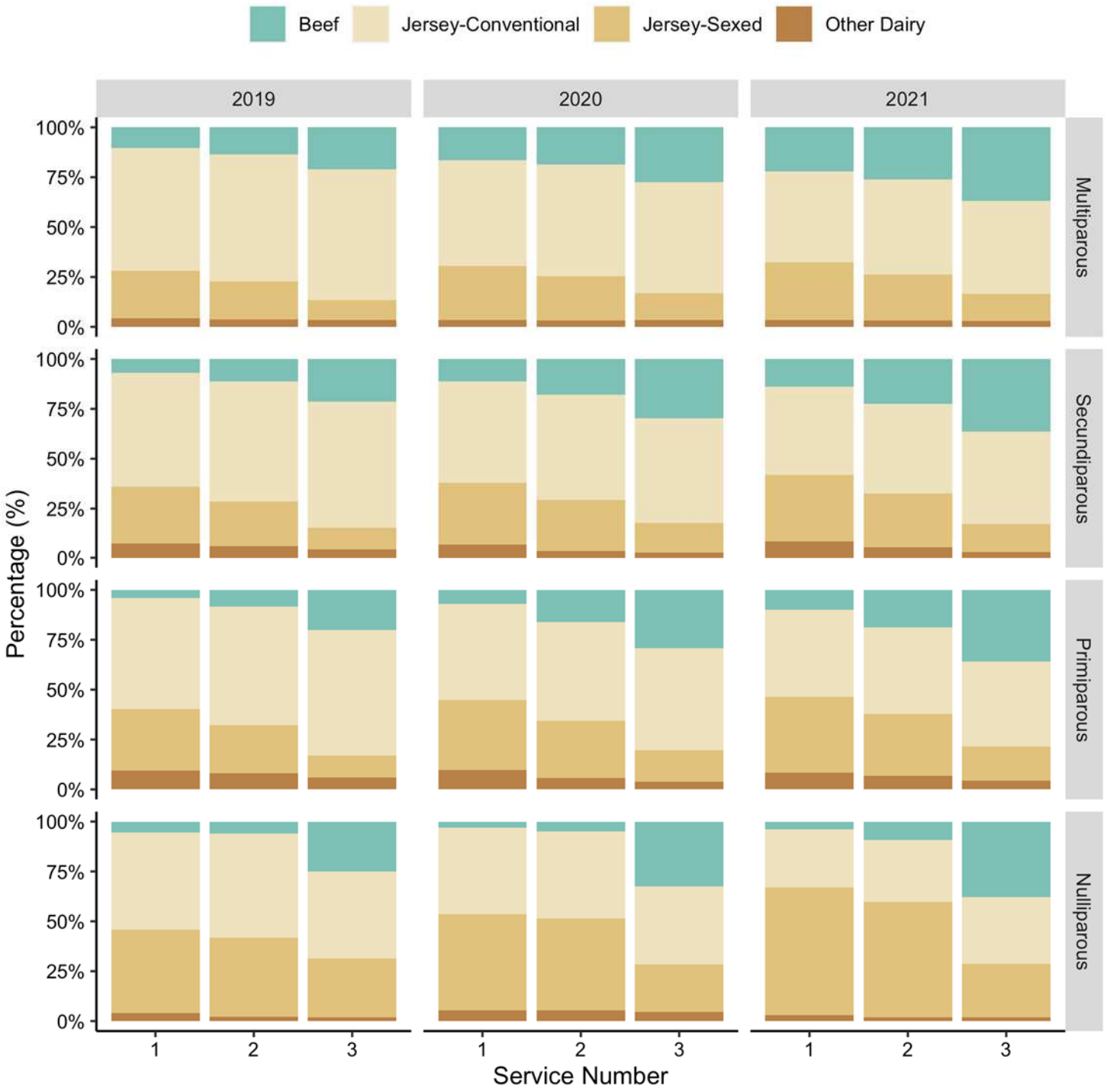
NAAB

**Conventional Sexed**

**Other Dairy (6 other U.S. dairy breeds)**



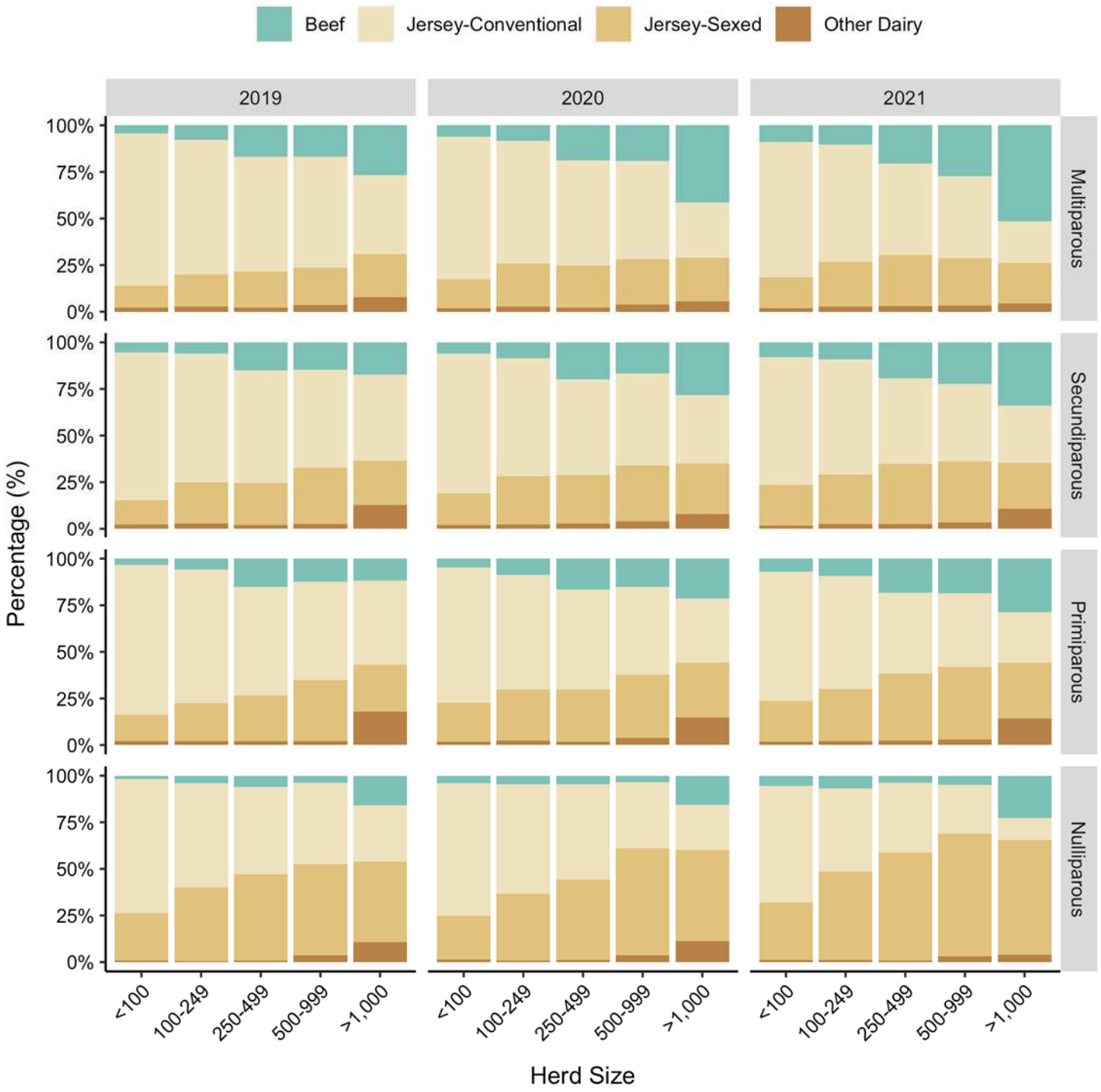

AN
LM
SM
XB
PS
JM
LA
CH
Other




**Lauber et al., 2023. Characterization of semen type prevalence and allocation in Holstein and Jersey females in the United States. J. Dairy Sci. 105:(accepted)**

**437,081 záznamů inseminace od 176,742 jerseyských samic z 2,780 stád**

DRMS




**Lauber et al., 2023. Characterization of semen type prevalence and allocation in Holstein and Jersey females in the United States.** J. Dairy Sci. 105:(accepted)

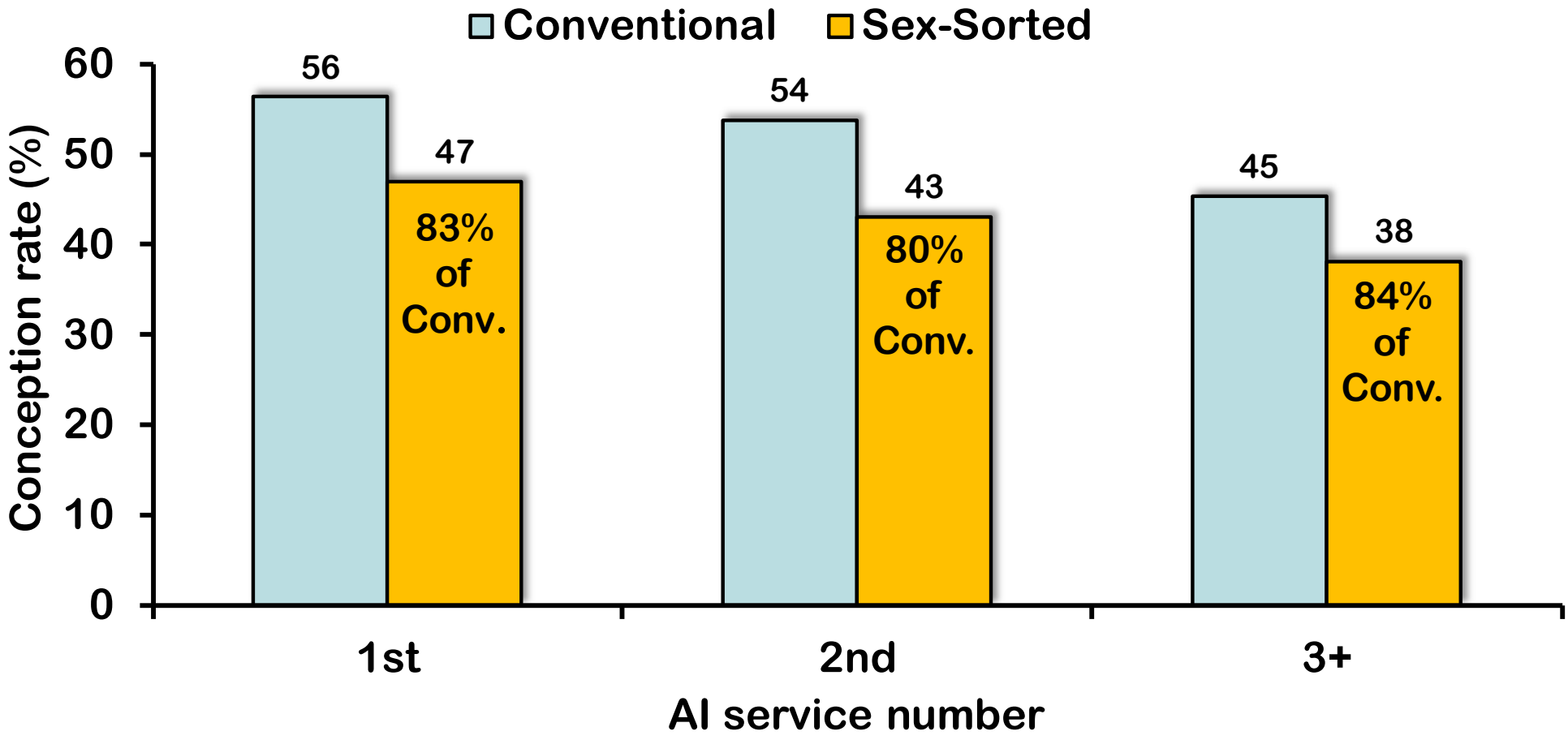
**437,081 záznamů inseminace od 176,742 jerseyských samic z 2,780 stád**

DRMS

# Komerční využití sexovaných ID u holštýnských jalovic

**DeJarnette et al., J. Dairy Sci. 91:459; 2008 (Abstr.)**

**49 stád od Leden 2005 po Leden 2008; 41,398 inseminací sexovanou ID.**
**Zabřezávání ~45 % a ~90% samic**

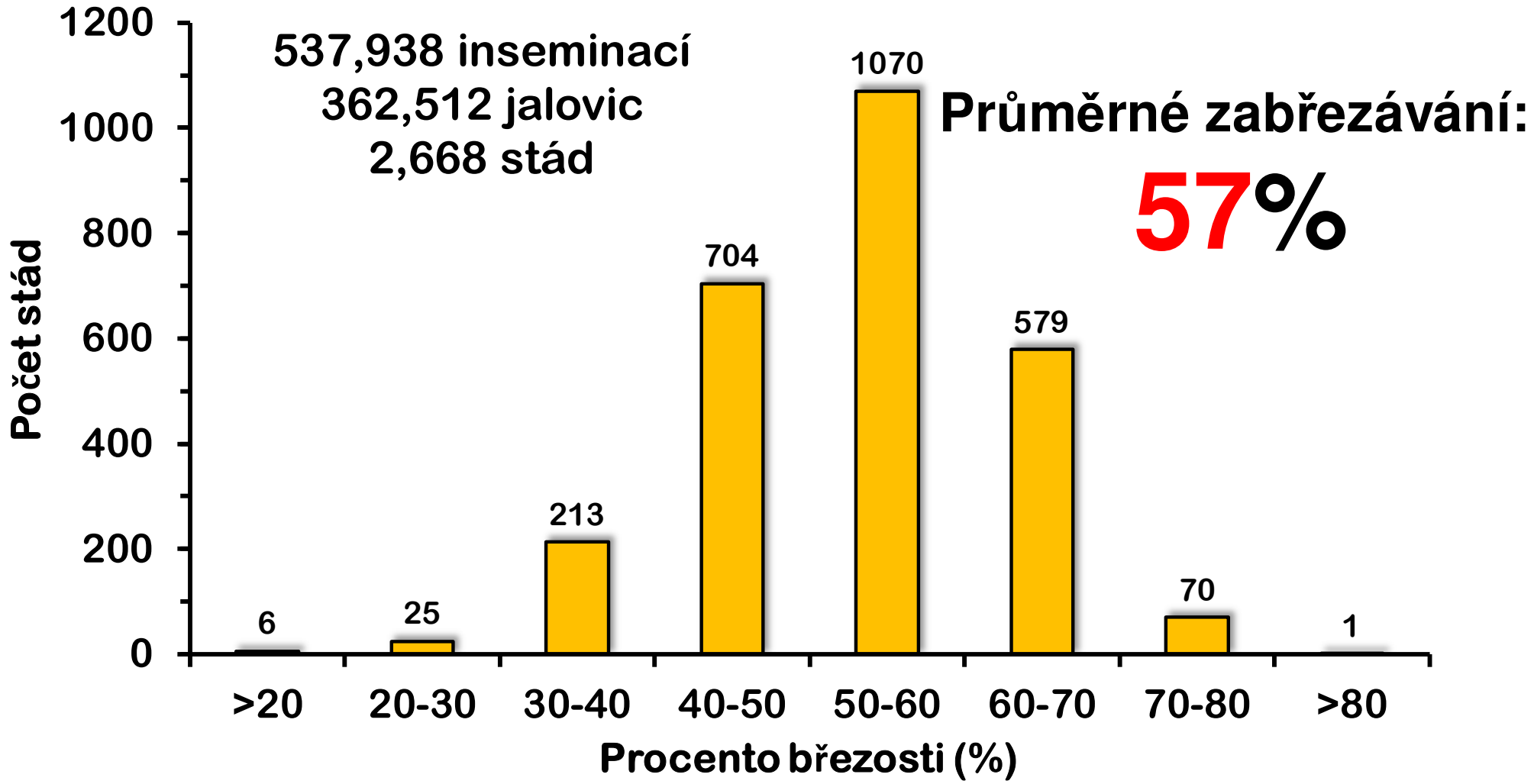



Jalovice!
D. DREAMS
21111
D. DREAMS
21045
20693

J. Dairy Sci. 89:4907–4920


# Characterization of Holstein Heifer Fertility in the United States

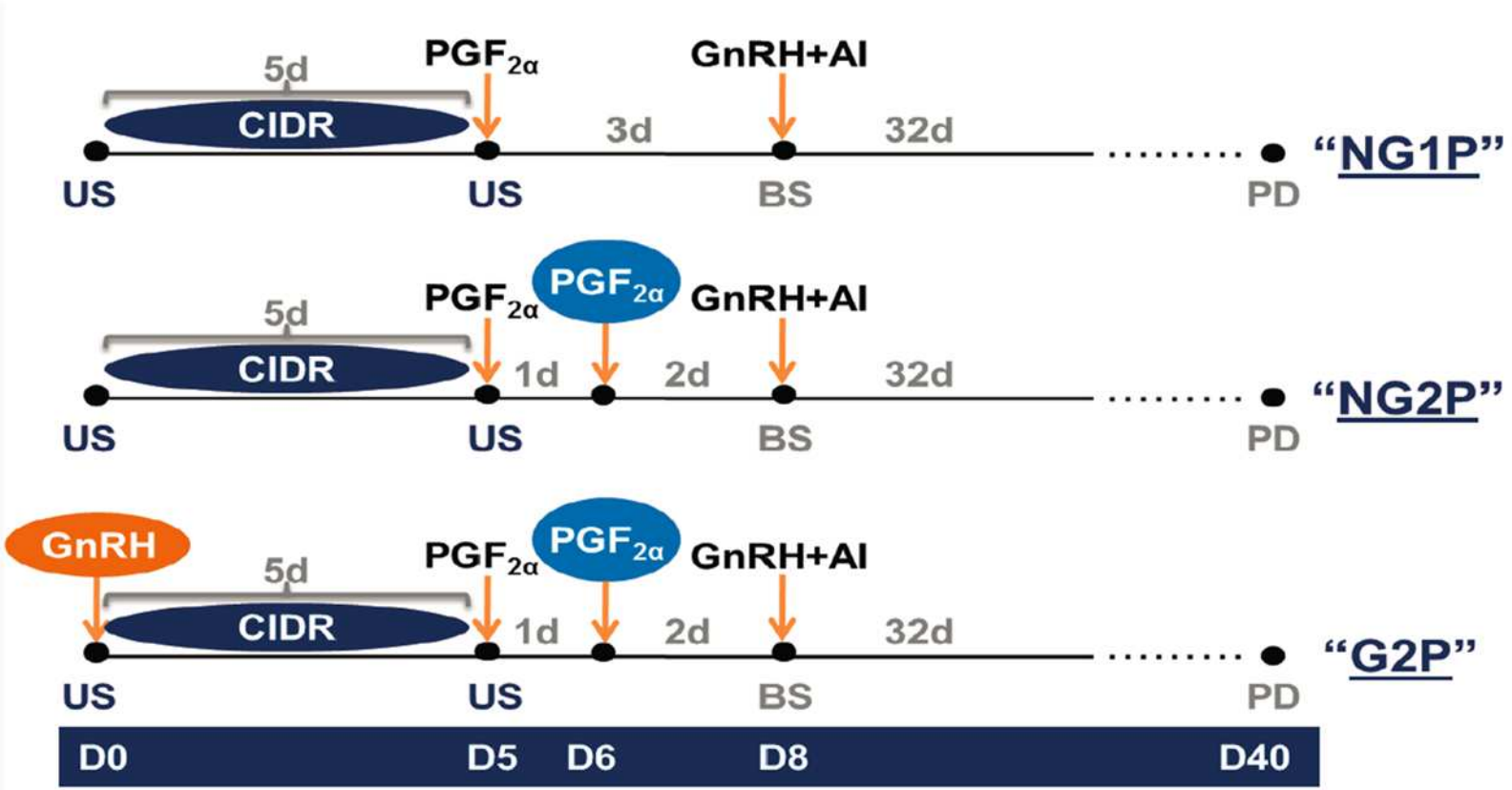
**M. T. Kuhn, J. L. Hutchison, and G. R. Wiggans**
Animal Improvement Programs Laboratory, Agricultural Research Service, USDA, Beltsville, MD 20705-2350



J. Dairy Sci. 96:7054–7065
http://dx.doi.org/10.3168/jds.2013-7093


# Hormonal manipulations in the 5-day timed artificial insemination protocol to optimize estrous cycle synchrony and fertility in dairy heifers

F. S. Lima,* E. S. Ribeiro,* R. S. Bisinotto,* L. F. Greco,* N. Martinez,* M. Amstalden,† W. W. Thatcher,* and J. E. P. Santos*[1]
*Department of Animal Sciences, University of Florida, Gainesville 32611
†Department of Animal Sciences, Texas A&M University, College Station 77843




US = Ovarian ultrasonography; BS = Blood sampling; PD = Pregnancy diagnosis

**P/AI, 60 d**

**49%**
**(348/711)**

**52%**
**(359/696)**

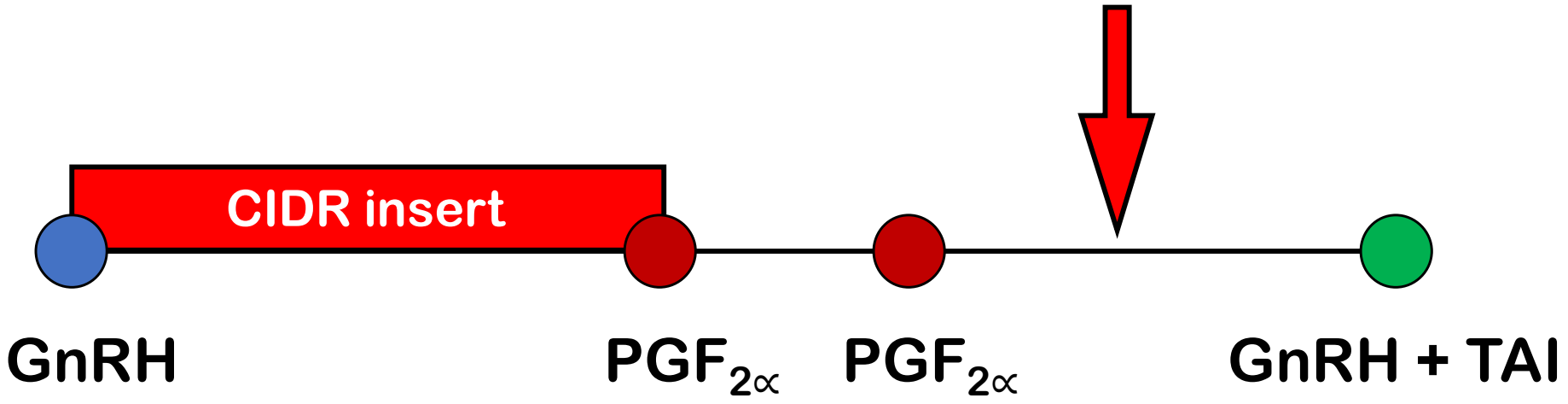
**59%**
**(420/711)**

# Říje ≥ 24 h před TAI

**Masello et al., 2019; Silva et al., 2015**

**27% až 33%**

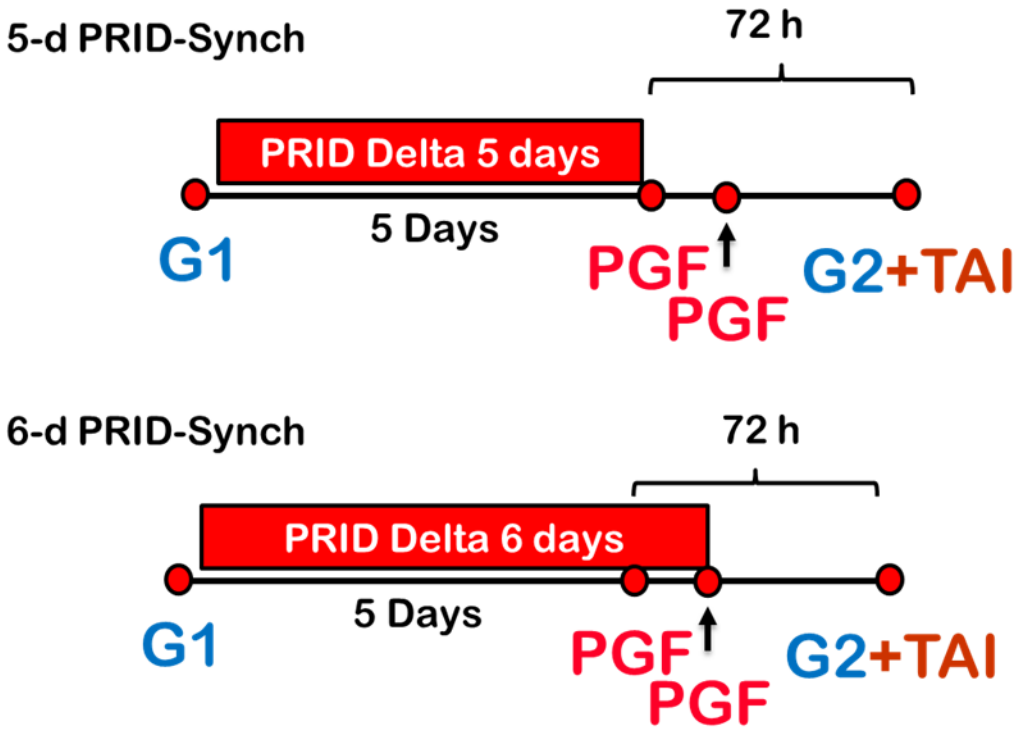
**časná říje**



J. Dairy Sci. TBC:1–16
https://doi.org/10.3168/jds.2021-20617
JDS20617


# Comparison of reproductive management programs for submission of Holstein heifers for first insemination with conventional or sexed semen based on expression of estrus, pregnancy outcomes, and cost per pregnancy

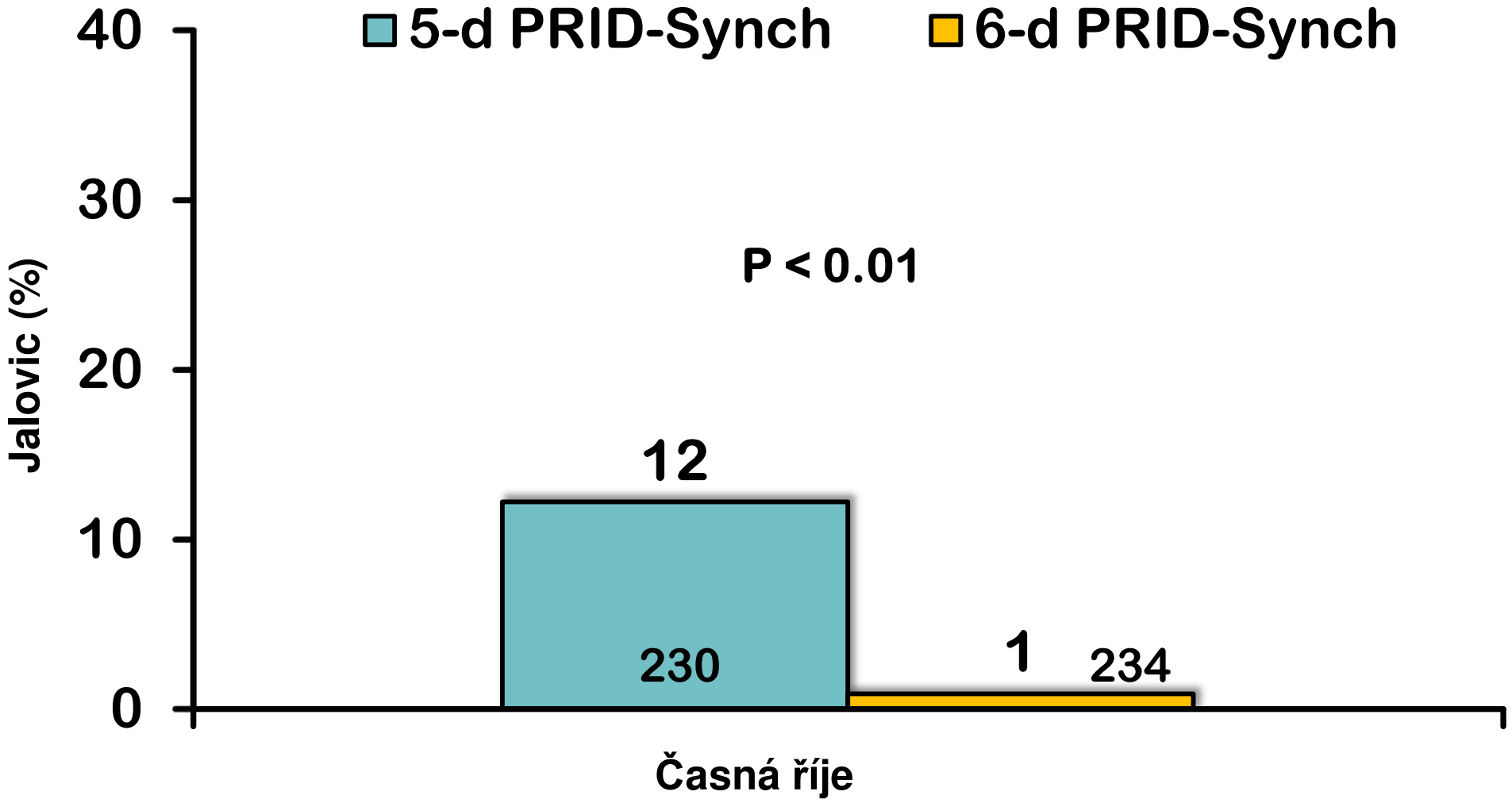
M. R. Lauber,[1] E. M. Cabrera,[1] V. G. Santos,[1] P. D. Carvalho,[1] C. Maia,[2] B. Carneiro,[2] A. Valenza,[3] V. E. Cabrera,[1] J. J. Parrish,[1] and P. M. Fricke[1]*
[1]Department of Animal and Dairy Sciences, University of Wisconsin-Madison, Madison 53706
[2]Diessen Serviços Veterinários Lda, 7001 Évora, Portugal
[3]CEVA Santé Animale, 10 Avenue de la Ballastiere, 33500 Libourne, France



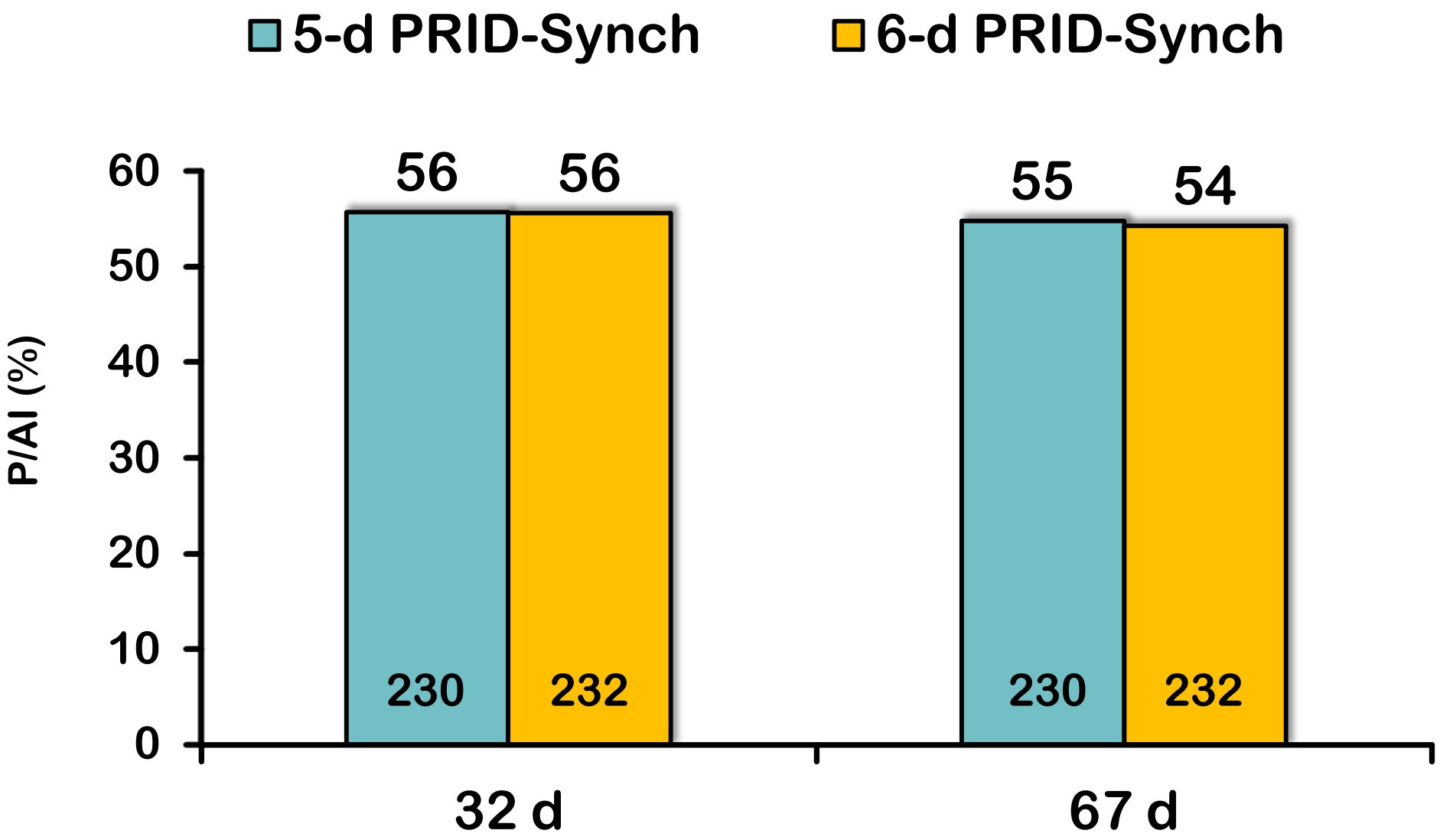

## Experiment 1

**Konvenční ID**

# Efekt programu na výskyt časné říje před TAI



# Efekt programu na březost po AI konvenčí ID



J. Dairy Sci. TBC:1–16
https://doi.org/10.3168/jds.2021-20617
JDS20617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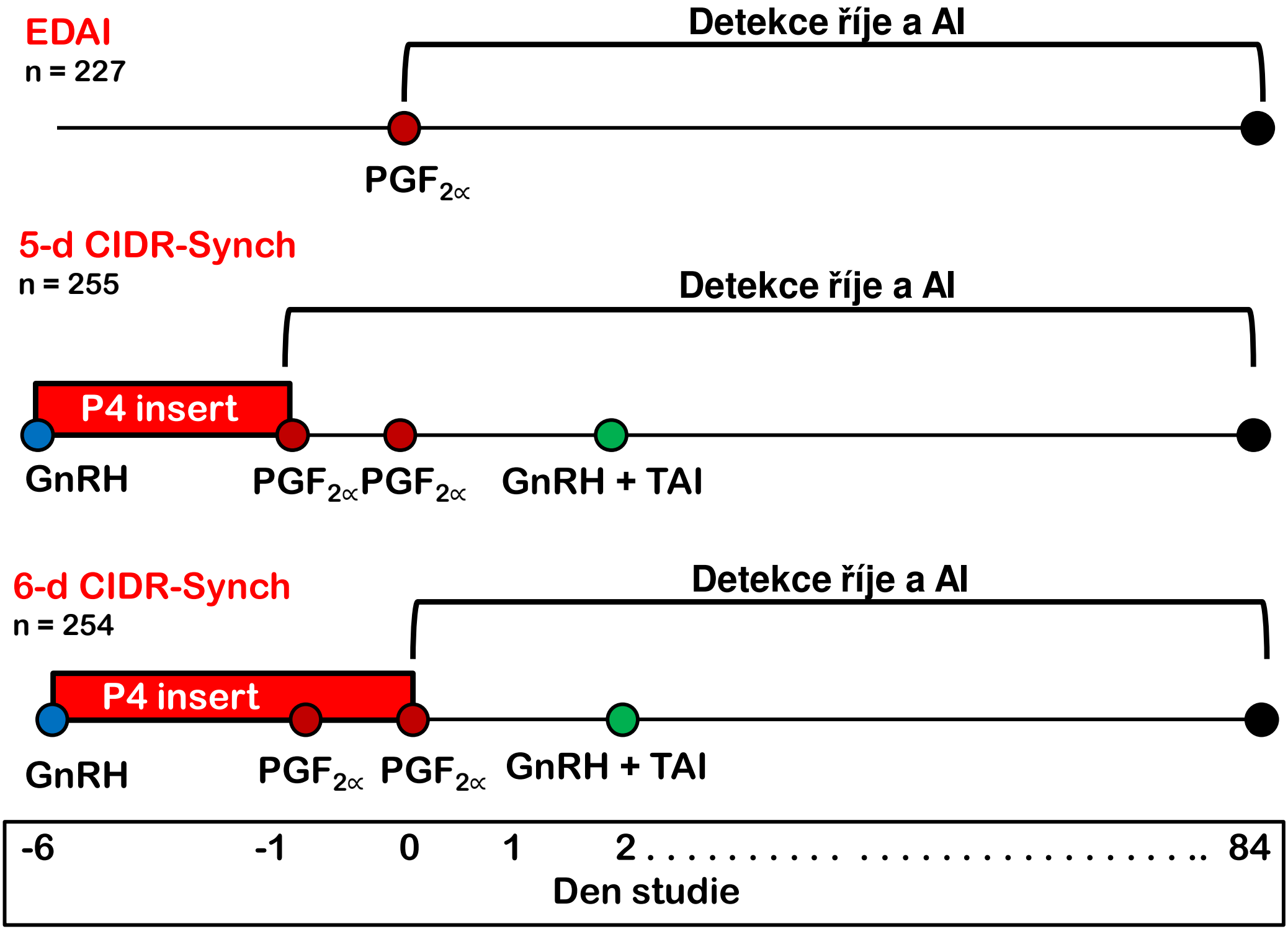
[3]CEVA Santé Animale, 10 Avenue de la Ballastiere, 33500 Libourne, France

| | Farma | | |
|---|---|---|---|
| | A | B | C |
| Jalovice | 1,434 | 815 | 805 |
| Krávy | 643 | 1,061 | 879 |
| ME305 | 14,266 | 12,452 | 14,600 |

**Experiment 2**

**Sexovaná ID**


EDAI
n = 227
Detekce říje a AI
PGF2∝
5-d CIDR-Synch
n = 255
Detekce říje a AI
P4 insert
GnRH
PGF2∝PGF2∝
GnRH + TAI
6-d CIDR-Synch
n = 254
Detekce říje a AI
P4 insert
GnRH
PGF2∝ PGF2∝
GnRH + TAI
-6
-1
0
1
2 . . . . . 84
Den studie

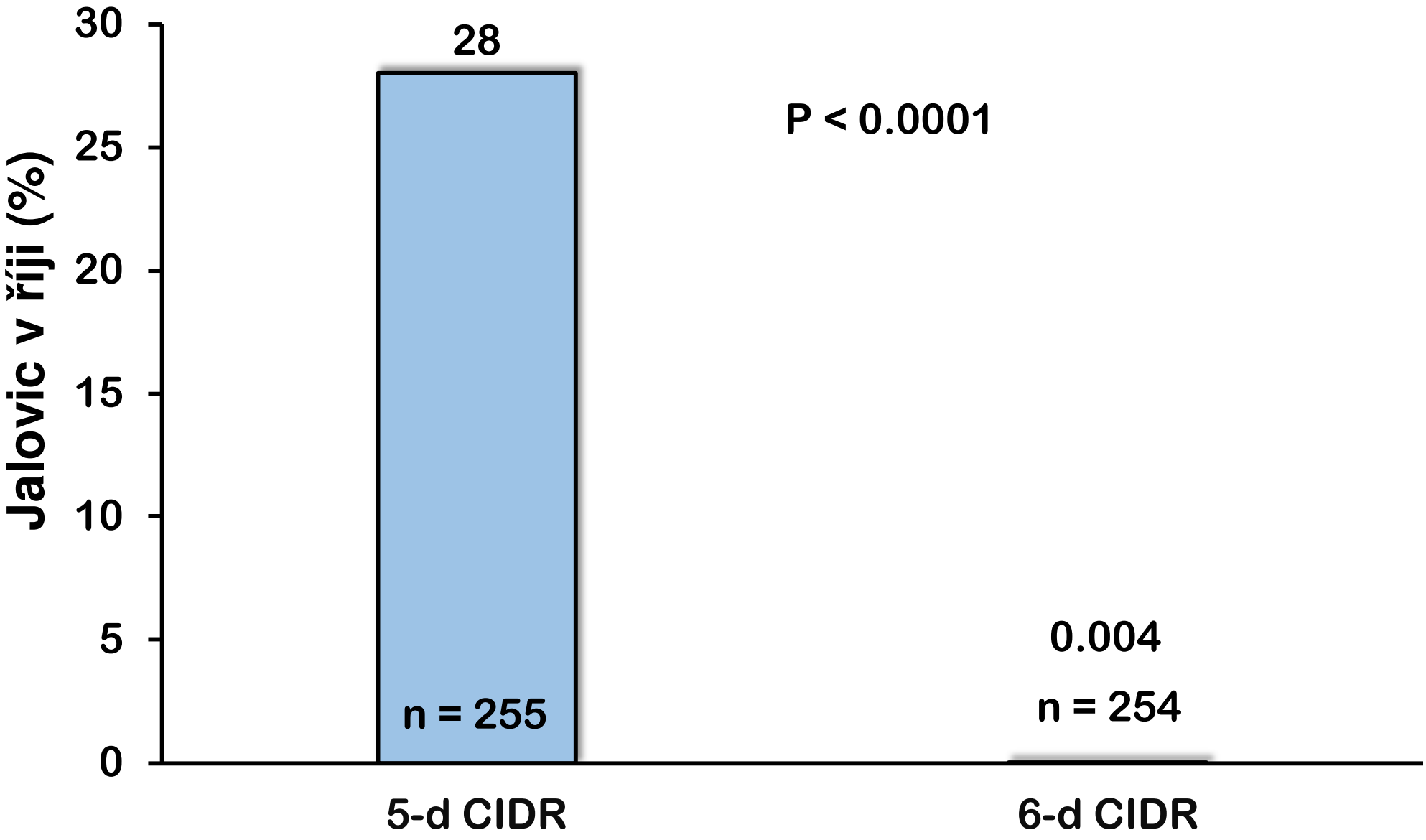
# Data u jalovic

| Item | Protokol | | | P - value |
|---|---|---|---|---|
| | 5-d CIDR | 6-d CIDR | EDAI | |
| n | 255 | 254 | 227 | |
| Váha[1] (kg) | 425.86 ± 2.13 | 423.54 ± 2.20 | 420.15 ± 2.24 | 0.29 |
| Věk[2] (d) | 401 ± 0.92 | 400 ± 0.92 | 400 ± 0.77 | 0.43 |

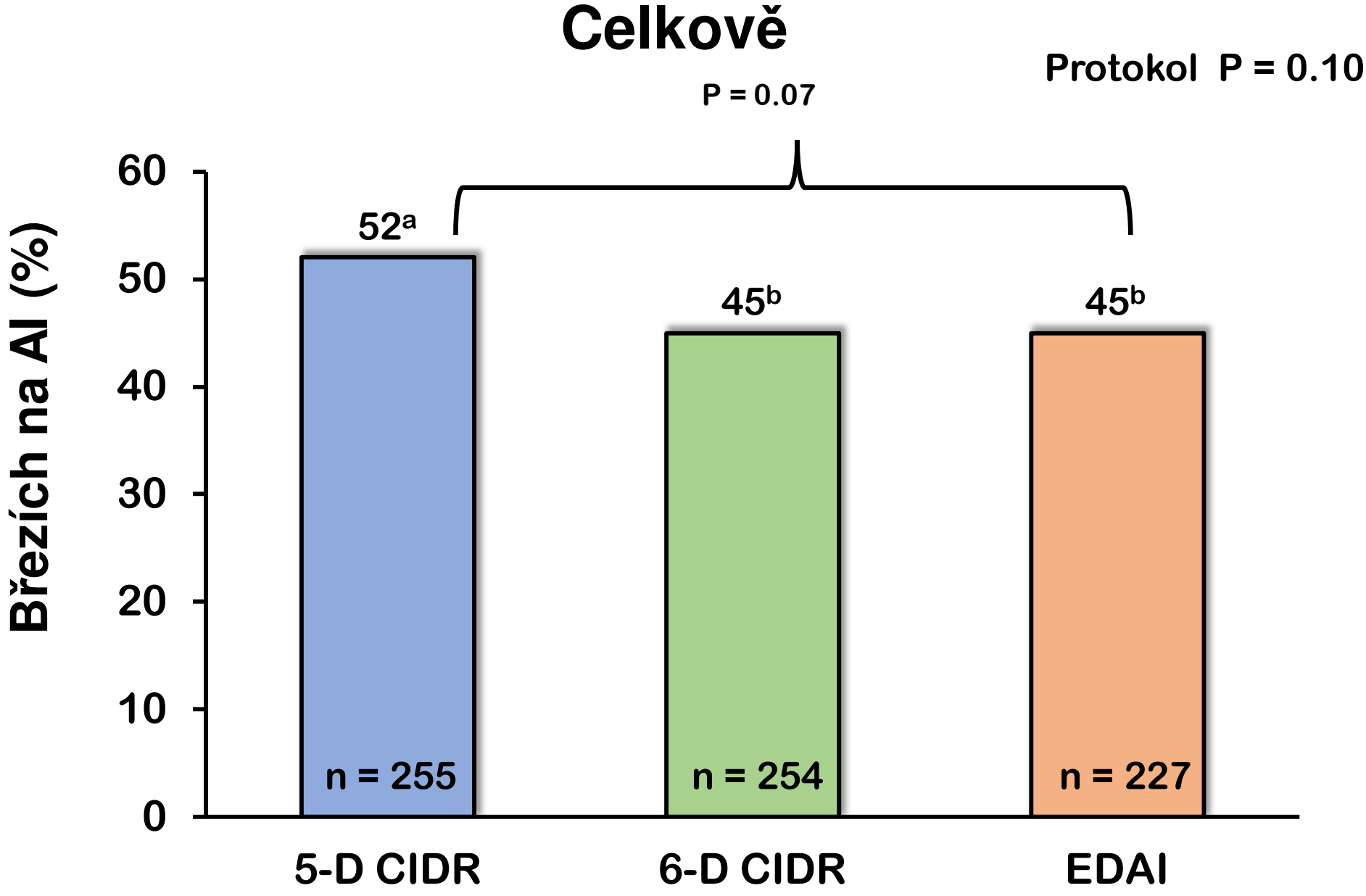
[1] váha v kg v den 0

[2] věk ve dnech při začátku pokusu (den -6)

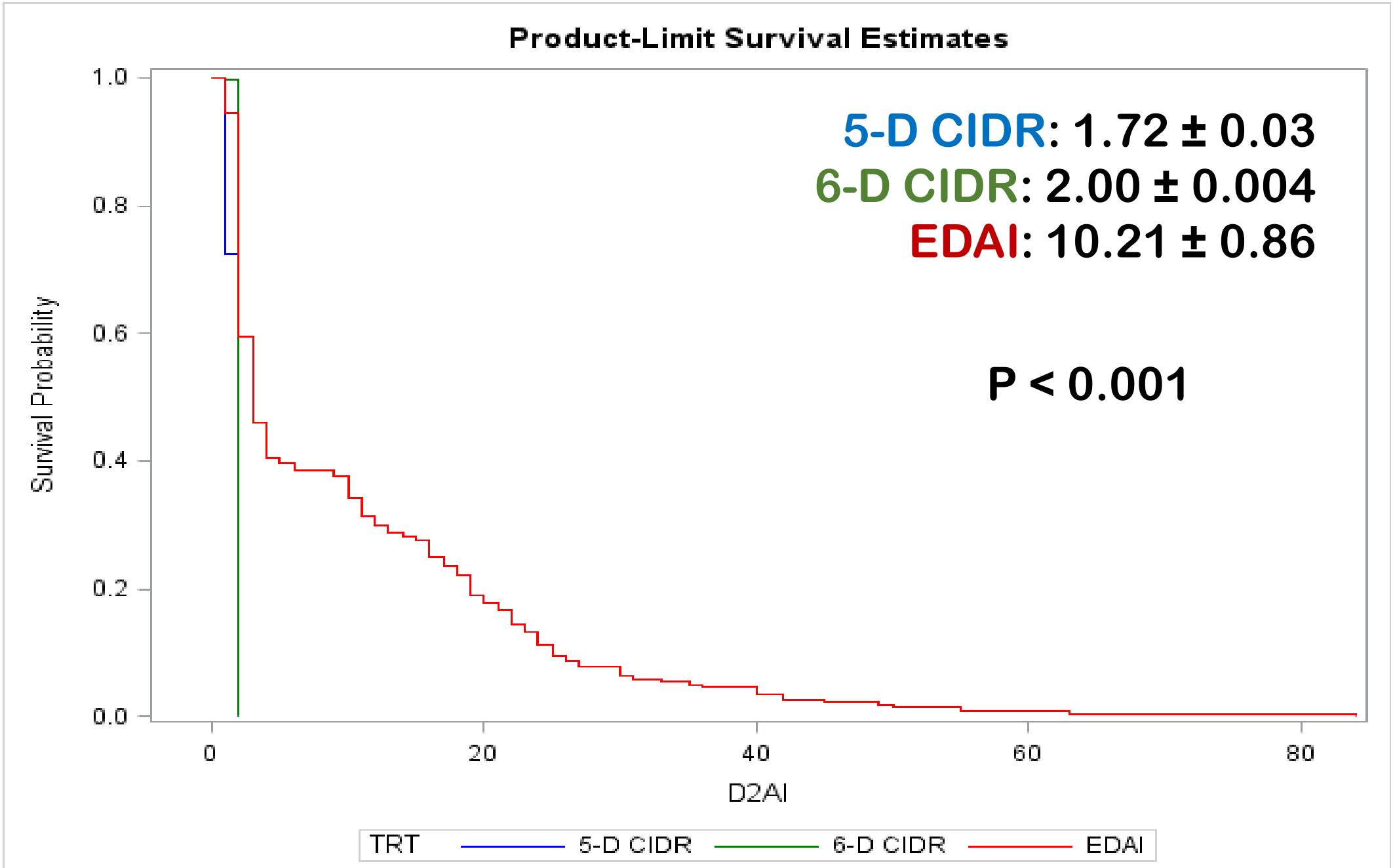
# Časná říje ≥ 24 h před TAI (d 1)



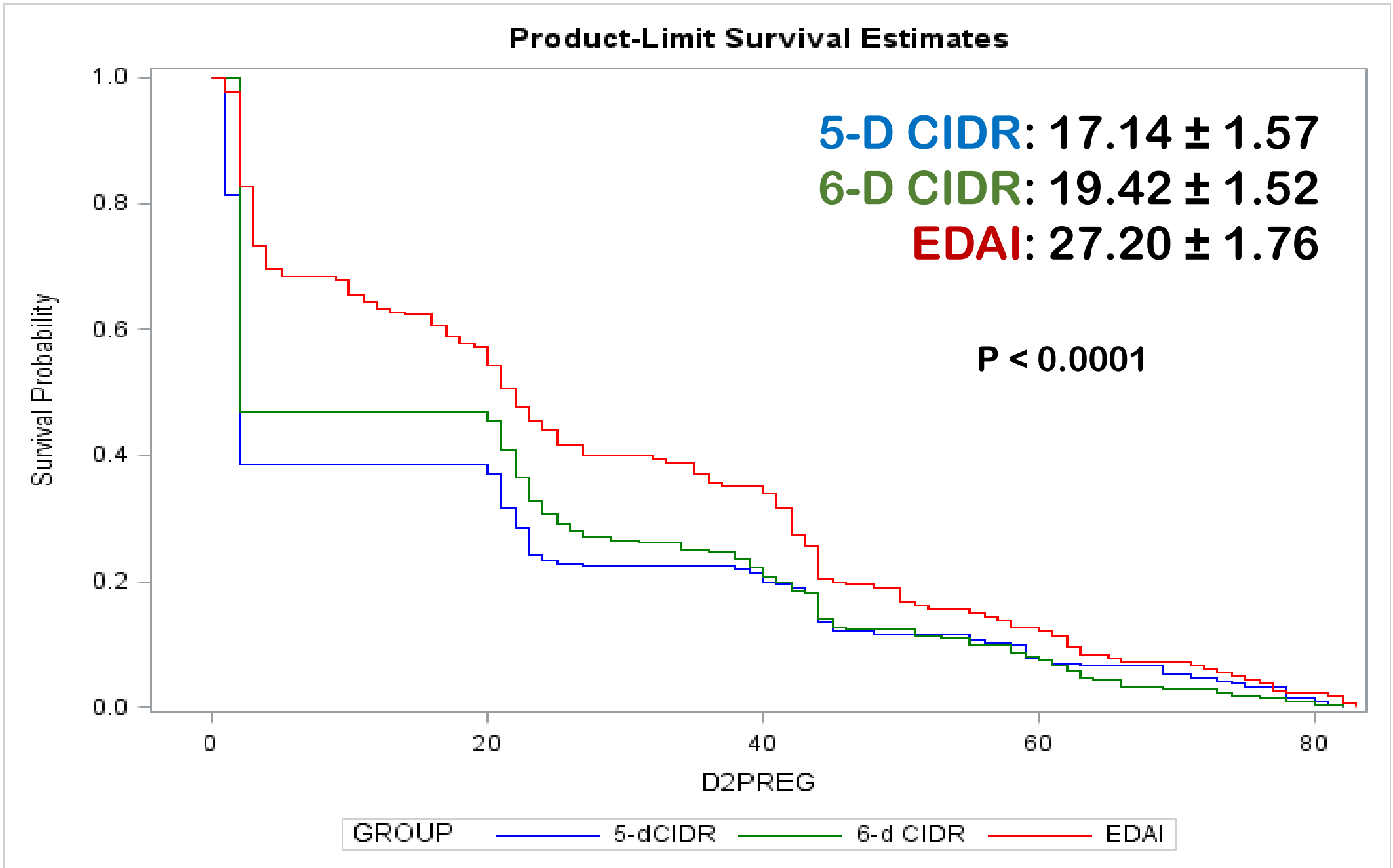
# Březích/AI 64 ± 5 dní po AI



# Počet dní do první AI



# Počet dní do zabřeznutí



# Dílčí analýza nákladů

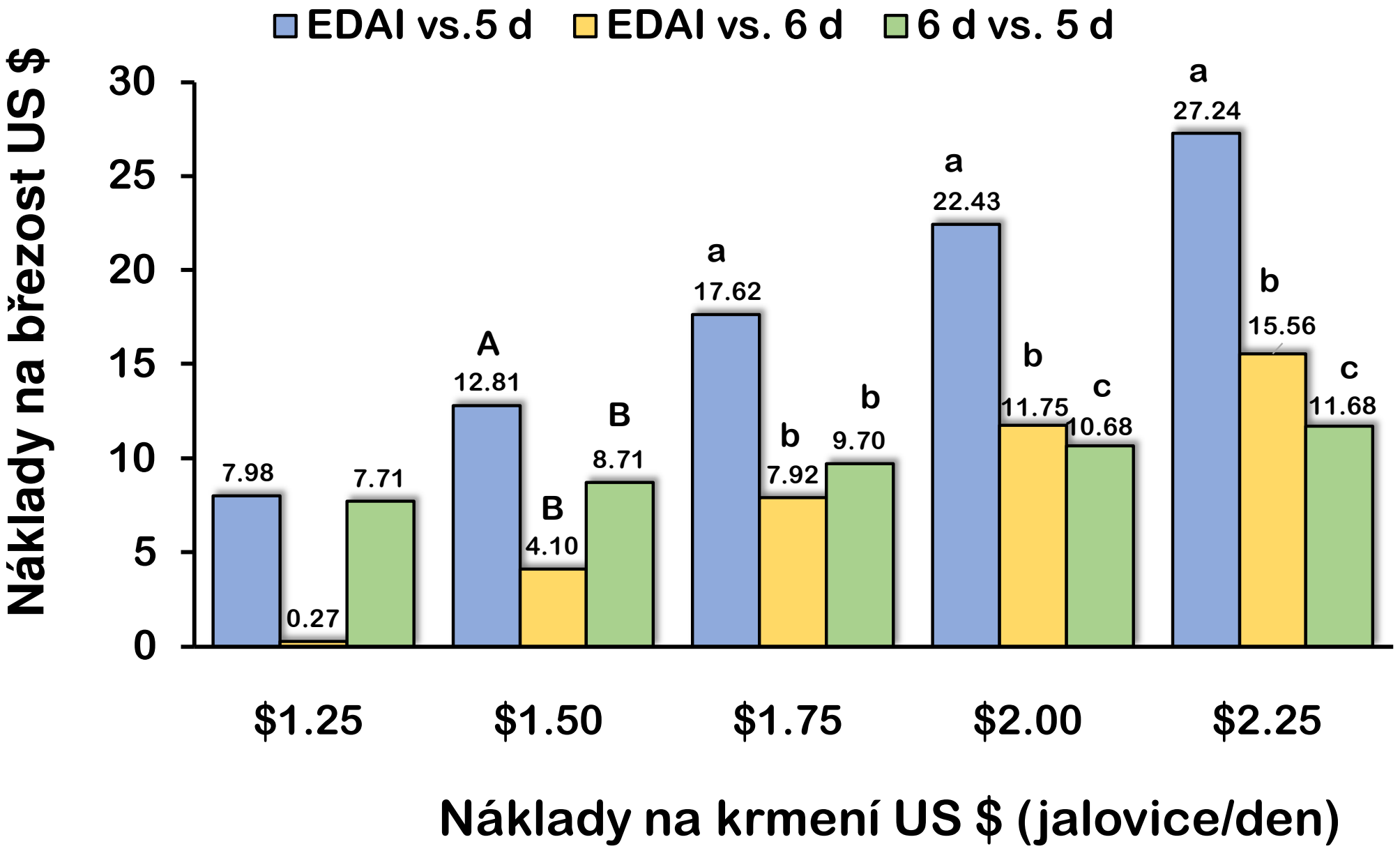
| Cena na březost, US$ | Program | | | P- value |
|---|---|---|---|---|
| | EDAI n = 181 | CIDR5 n = 225 | CIDR6 n = 218 | |
| Hormony | 4.05 ± 0.38[a] | 22.29 ± 0.36[b] | 21.85 ± 0.36[b] | < 0.0001 |
| Detekce říje | 3.04 ± 0.19[a] | 2.03 ± 0.18[b] | 2.18 ± 0.17[b] | < 0.0001 |
| ID and AI | 70.50 ± 2.47 | 69.78 ± 2.37 | 72.02 ± 2.28 | 0.39 |
| Dg březosti | 9.55 ± 0.24 | 9.50 ± 0.14 | 9.42 ± 0.13 | 0.42 |
| Krmivo | 82.79 ± 3.01[a] | 50.10 ± 2.73[b] | 56.84 ± 2.56[b] | < 0.0001 |
| Celkově na březost | 169.92 ± 5.55[a] | 153.26 ± 5.36[b] | 162.75 ± 5.03[ab] | 0.04 |

$153.26 - $169.92 = - $16.66

Kč 3 371 - 3 738 = - 367 Kč

# Analýza nákladů na krmení

## Rozdíly v nákladech na 84 denní březost



J. Dairy Sci. 103:10856–10861
https://doi.org/10.3168/jds.2020-18836


# *Short communication:* Effect of timing of induction of ovulation relative to timed artificial insemination using sexed semen on pregnancy outcomes in primiparous Holstein cows

**M. R. Lauber,[1] B. McMullen,[2] J. J. Parrish,[3] and P. M. Fricke[1]***
[1]Department of Dairy Science, University of Wisconsin-Madison, Madison 53706
[2]Bridgewater Dairy Group, Montpelier, OH 43543
[3]Department of Animal Sciences, University of Wisconsin-Madison, Madison 53706

# Hypotéza:

## Indukce ovulace (G2) časněji před TAI v Double-Ovsynch protokolu povede k více březostem na AI

Theriogenology 85 (2016) 533–539

Contents lists available at ScienceDirect

Theriogenology

journal homepage: www.theriojournal.com

# Time of insemination relative to reaching activity threshold is associated with pregnancy risk when using sex-sorted semen for lactating Jersey cows

Gabriel D. Bombardelli [a,b], Henrique F. Soares [a,b], Ricardo C. Chebel [a,b,*]

[a] Department of Large Animal Clinical Sciences, University of Florida, Gainesville, Florida, USA
[b] Department of Animal Sciences, University of Florida, Gainesville, Florida, USA

Journal of
Dairy & Veterinary Sciences
ISSN: 2573-2196

Research Article
Volume 5 Issue 1 - January 2018
DOI: 10.19080/JDVS.2018.05.555653

Dairy and Vet Sci J


# Time of Insemination Relative to onset of Activity Threshold of Cow Manager ® is Associated with Pregnancy Risk When Using Gender Selected ™ Semen for Jersey Cattle

Ray Nebel*

*Department of animal reproduction, Select Sires Inc, USA*

**Submission:** October 27, 2017; **Published:** January 25, 2018

**Pozdnější inseminuace vzhledem k nástupu aktivity přinesla zvýšení plodnosti po inseminaci sexovanou ID**

# Spolupracující farmy

- **Tři lokace:**
  - **Nebraska, Ohio, Wisconsin**
- **Pouze primiparní krávy (n = 730)**
- **Na všech farmách se pro první insem. používá Double-Ovsynch protokol**
  - **Farma A: 6,650 krav; ME305 = 11,318 kg.**
  - **Farma B: 1,800 krav; ME305 = 12,954 kg.**
  - **Farma C: 2,260 krav; ME305 = 14,091 kg.**

# Standardní Double-Ovsynch Protokol

## od G2 do TAI = 16 h

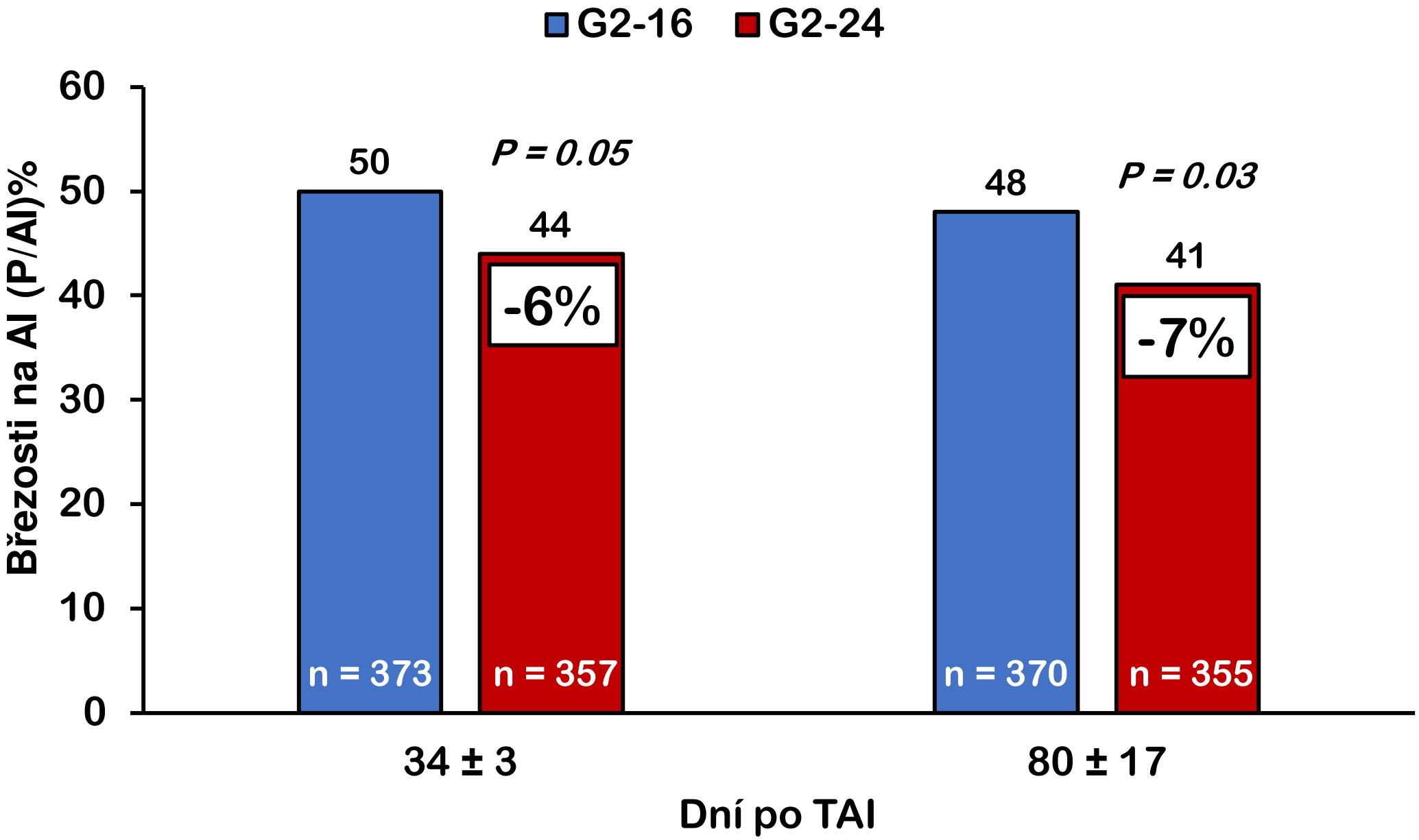
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| | | | | | GnRH ráno | |
| | | | | | $PGF_{2\alpha}$ ráno | |
| | GnRH ráno | | G2-16 | | | |
| | GnRH ráno | | | | | |
| | $PGF_{2\alpha}$ ráno | $PGF_{2\alpha}$ ráno. | G2 Odpol. | TAI ráno | | |

# Modifikovaný Double-Ovsynch Protokol

## od G2 do TAI = 24 h

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| | | | | | GnRH ráno | |
| | | | | | $PGF_{2\alpha}$ ráno | |
| | GnRH ráno | | | | | |
| | GnRH ráno | | G2-24 | | | |
| | $PGF_{2\alpha}$ ráno | $PGF_{2\alpha}$ ráno | G2 ráno | TAI ráno | | |

# Vliv postupu na březost



# Standardní Double-Ovsynch Protokol

## Holštýnky na první laktaci

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|
| | | | | | GnRH a.m. | |
| | | | | | $PGF_{2\alpha}$ a.m. | |
| | GnRH a.m. | | | | | |
| | GnRH a.m. | | | | | |
| | $PGF_{2\alpha}$ a.m. | $PGF_{2\alpha}$ a.m. | G2 p.m. | TAI a.m. | | |

# Plodnost jerseyských krav inseminovaných sexovaným jersey semenem nebo konvenční masnou ID po Double-Ovsynch protokolu a TAI vs. AI po synchronizaci estru

M. R. Lauber, P. D. Carvalho,
and P. M. Fricke


ANIMAL &
DAIRY SCIENCES
University of Wisconsin-Madison

J. Dairy Sci. 100:8507–8517
https://doi.org/10.3168/jds.2017-13210

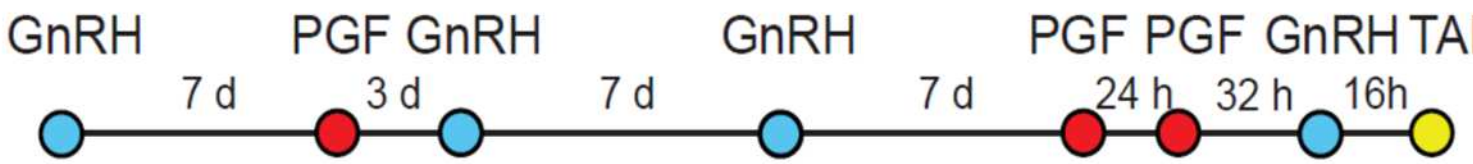

**Konvenční semeno**

# Fertility of lactating Holstein cows submitted to a Double-Ovsynch protocol and timed artificial insemination versus artificial insemination after synchronization of estrus at a similar day in milk range

V. G. Santos,* P. D. Carvalho,* C. Maia,† B. Carneiro,† A. Valenza,‡ and P. M. Fricke*[1]
*Department of Dairy Science, University of Wisconsin, Madison 53706
†Diessen Serviços Veterinários Lda, 7001 Évora, Portugal
‡Ceva Santé Animale, 10 Avenue de la Ballastiere, 33500 Libourne, France

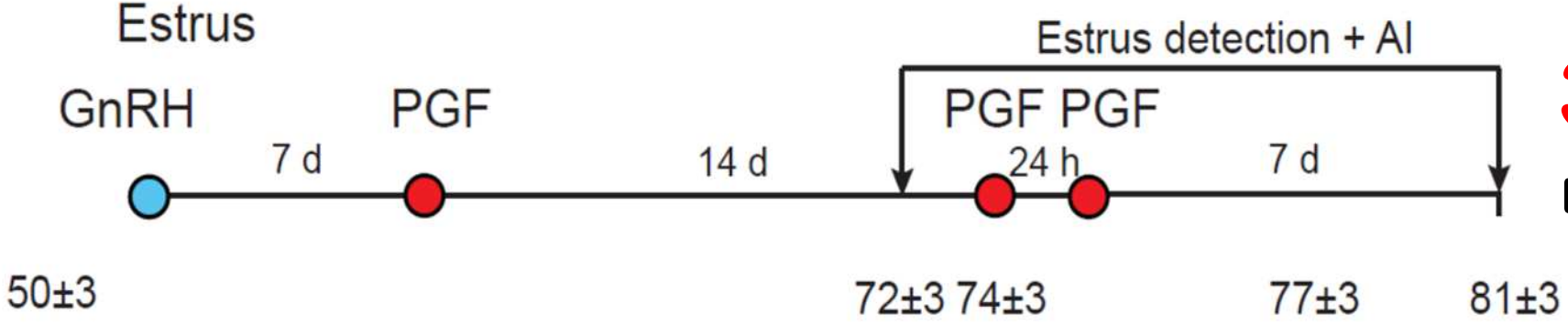
**SR=100%**

Double-Ovsynch




**49%**
**n=294**

Estrus




**39%**
**n=284**

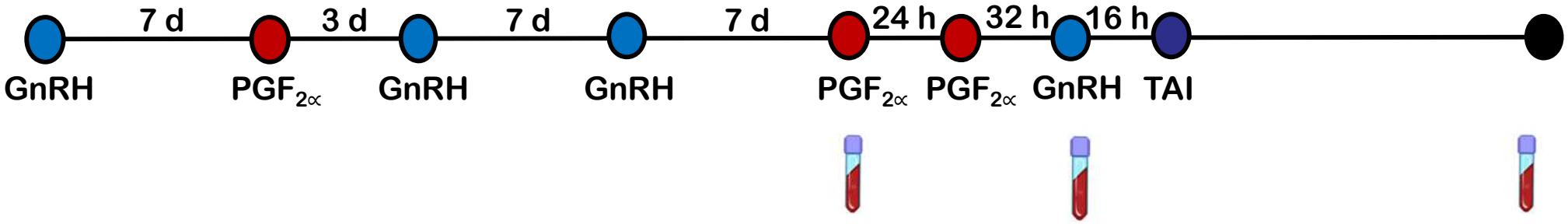
**% březích krav ve 110 DIM: 49 vs. 30**

**SR=78%**

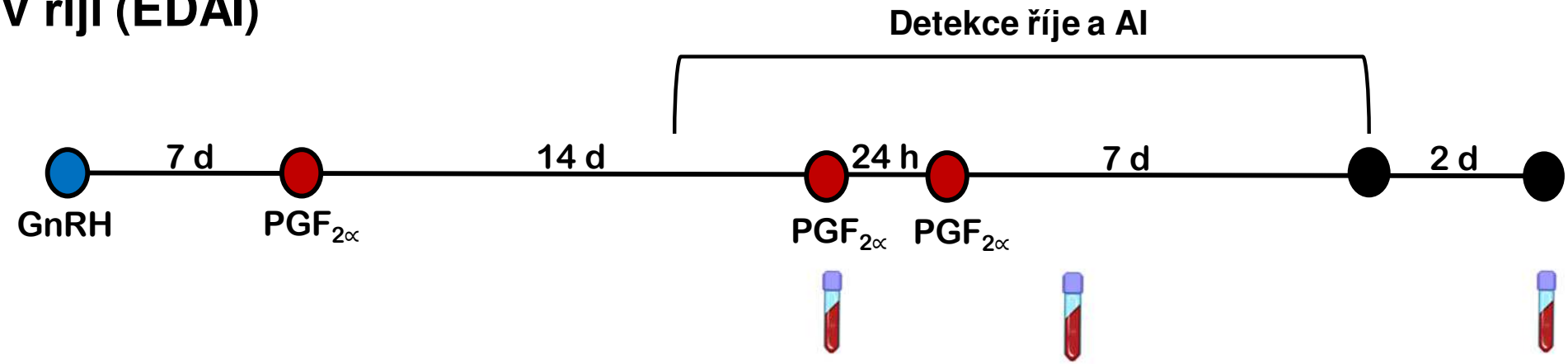
# Experimentální design

## Sexovaná a konvenční masná ID

### Double-Ovsynch a časovaná AI (DO)




### AI v říji (EDAI)




**Krávy nezjištěné v říji během 7 dní podstoupily 7 denní Ovsynch.**

# Zvířata

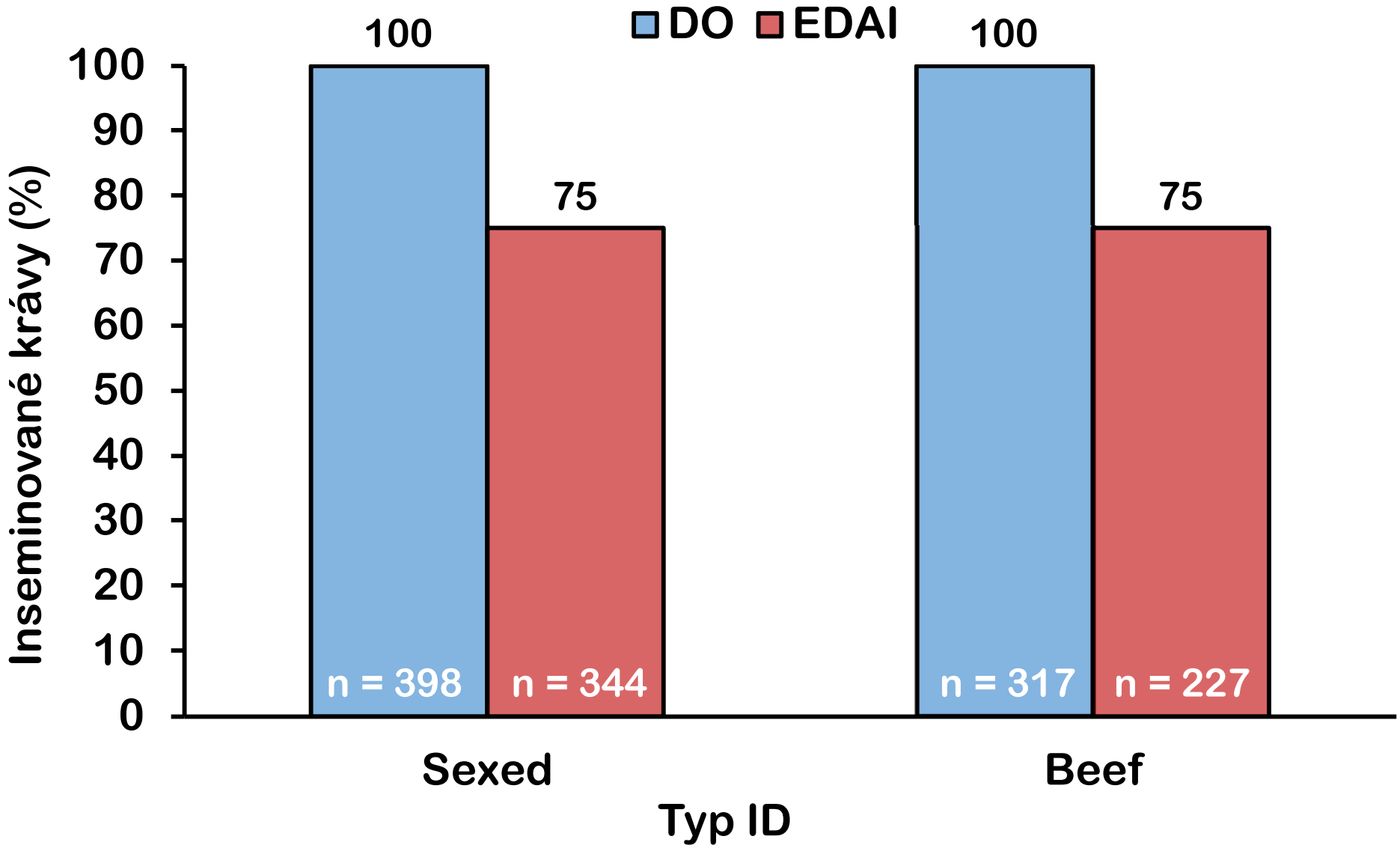
**336 prvotelek 950 starších krav plemene Jersey**

| ID | Protokol | | |
|---|---|---|---|
| | DO | EDAI | celkem |
| Masná | 317 | 227 | 544 |
| Sexovaná | 398 | 344 | 742 |
| Celkově | 715 | 571 | 1,286 |

**Rozhodnutí, jestli inseminovat sexovanou nebo masnou ID bylo učiněno na farmě chovatelem. Připuštěné krávy se pak náhodně rozdělily mezi každý typ ID**

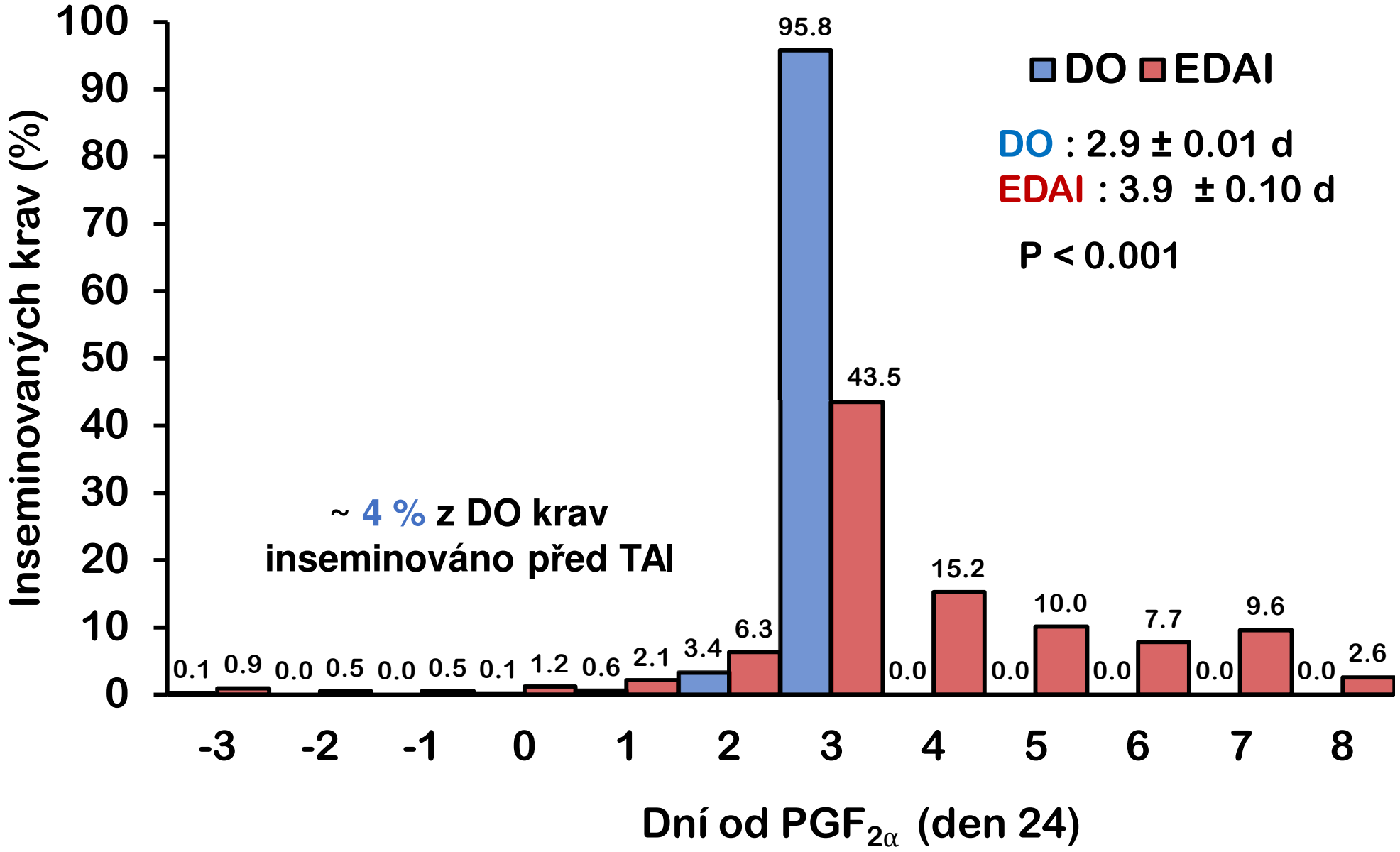
# Inseminované krávy

## Typ ID

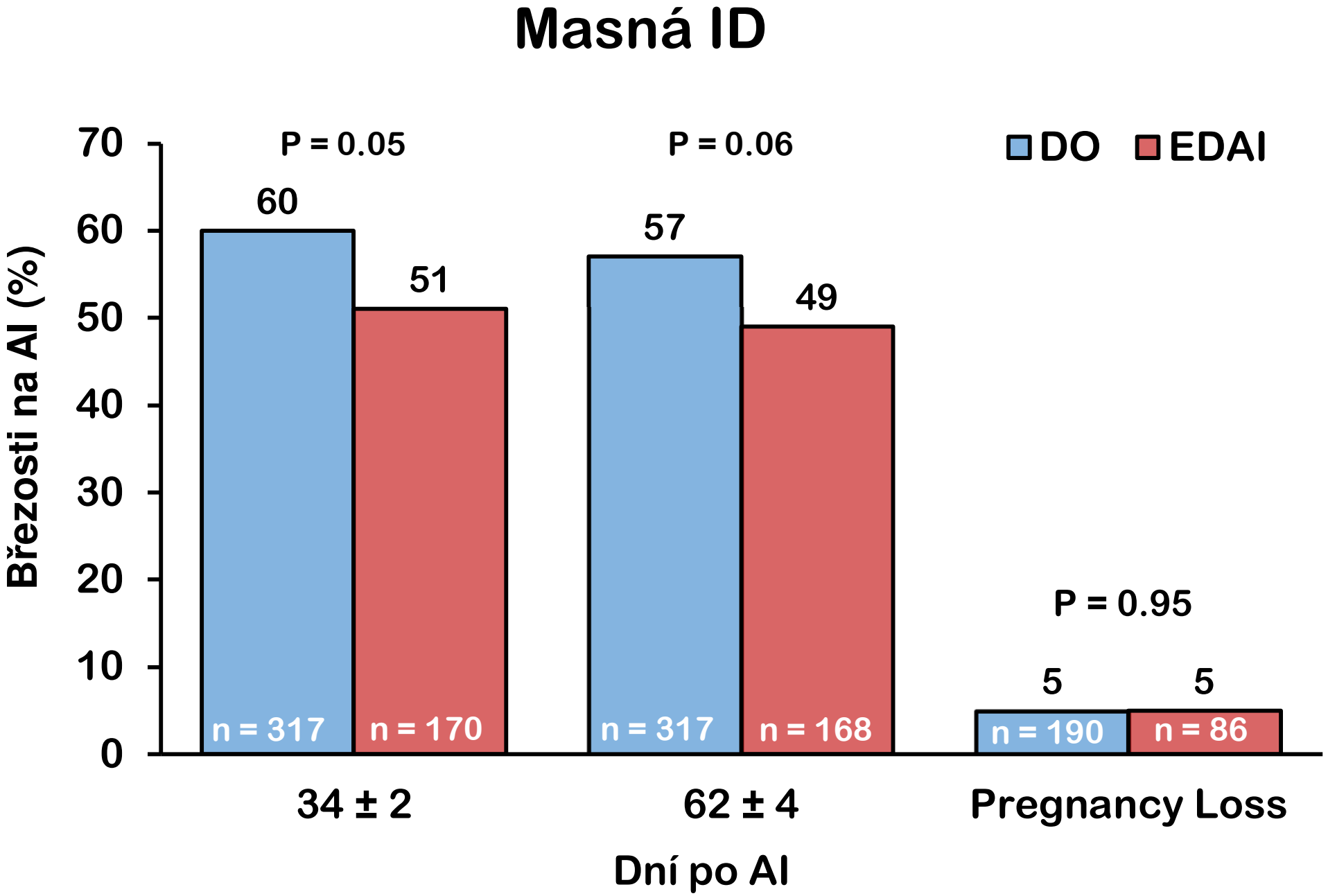


# Rozdělení inseminovaných krav

## Od aplikace PGF den 24 protokolu (0)

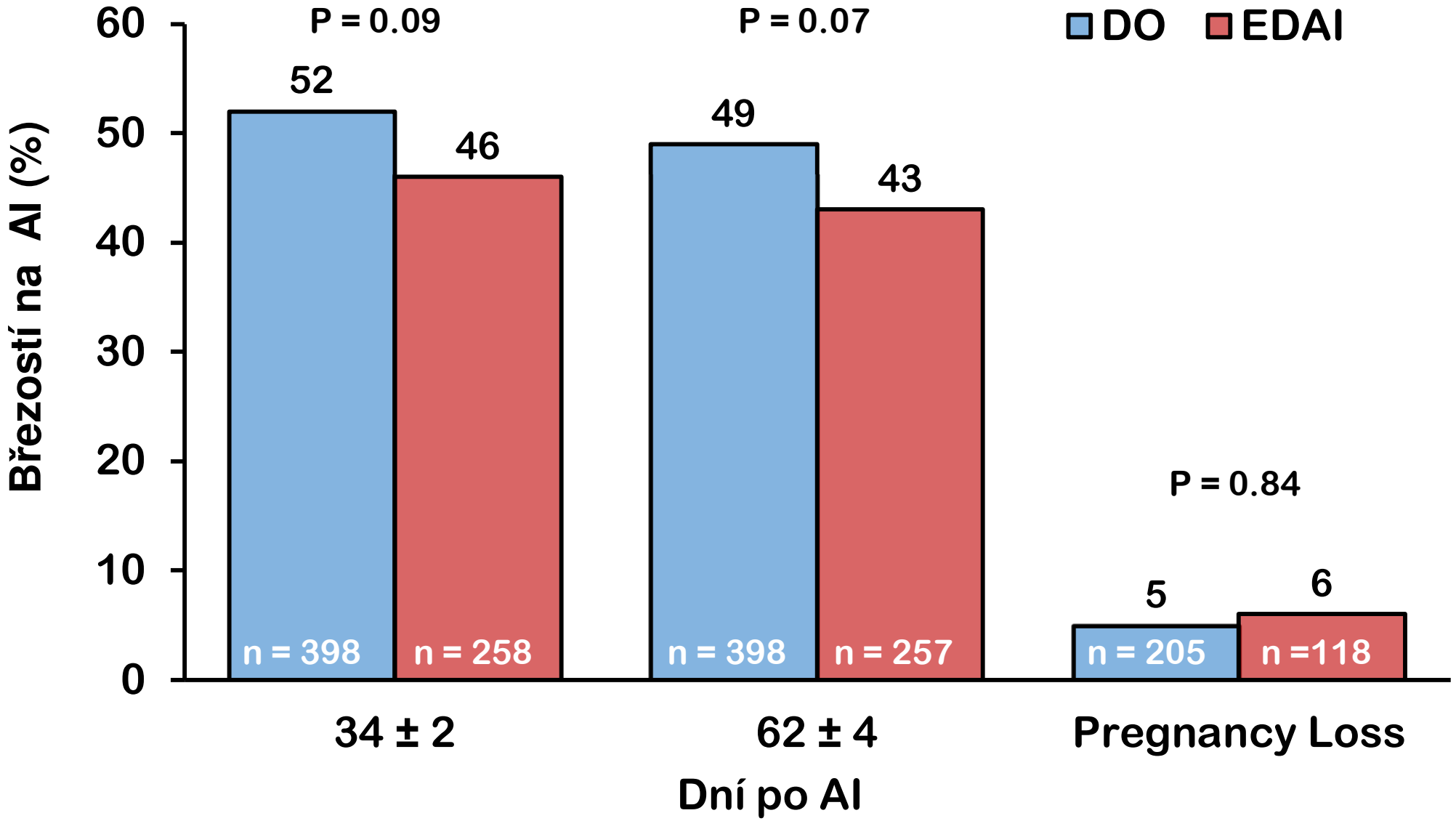


# Vliv protokolu na % březosti



# Vliv protokolu na % březosti

## Sexovaná ID




# Ďakujem za pozornosť!