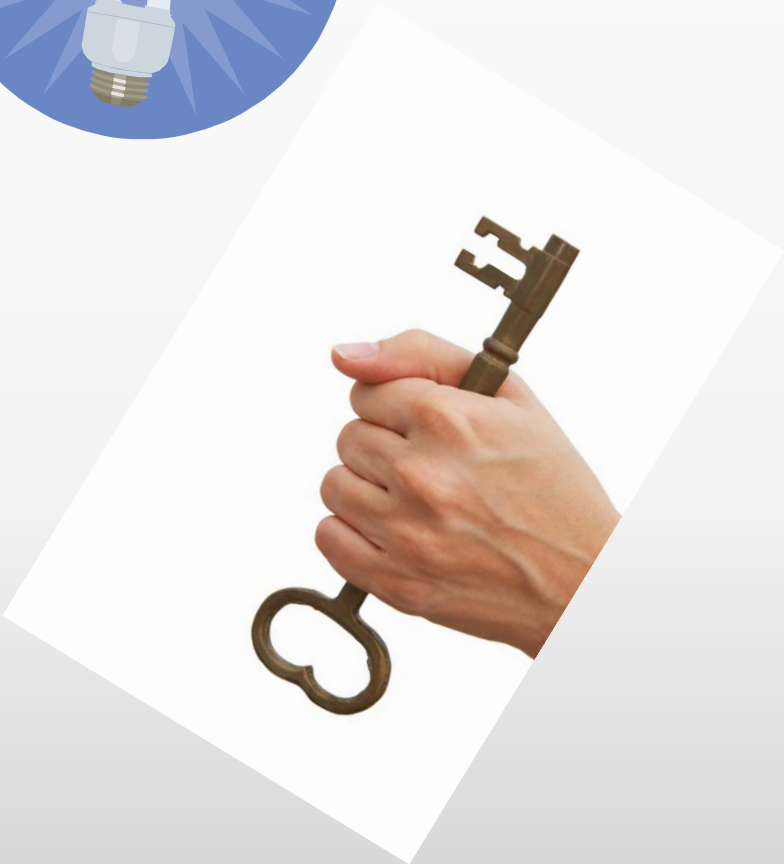


IMPORTANT POINTS IN COLLECTING AND PROCESSING OF BOVINE SEMEN

BRAZILIAN EXPERIENCE

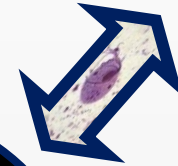
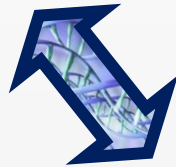
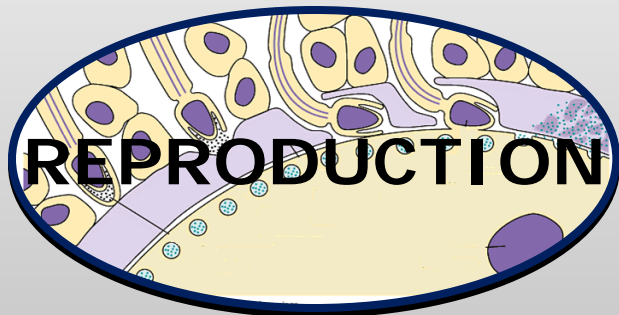
**LÚCIA HELENA RODRIGUES
VETERINARY**

OCTOBER, 2014



Q U A L I T Y





GENETIC QUALITY

- Selection of bulls
 - Production
 - Hereditary problems

SANITARY QUALITY

- Diseases Diagnosis
 - Control
 - Prevention
 - Monitoring

REPRODUCTIVE QUALITY

- Bulls Selection
 - Andrological evaluation
 - Ejaculates selection

ENVIRONMENTAL QUALITY

- Animal Welfare
 - Nutrition
 - Animal management

SANITARY QUALITY

Tested Diseases (minimum requirements – AM)

Quarantine Facilities:

Brucellosis

Tuberculosis

Trichomonosis

Campylobacteriosis

BVD

Residents Animals: once a year

Brucellosis

Tuberculosis

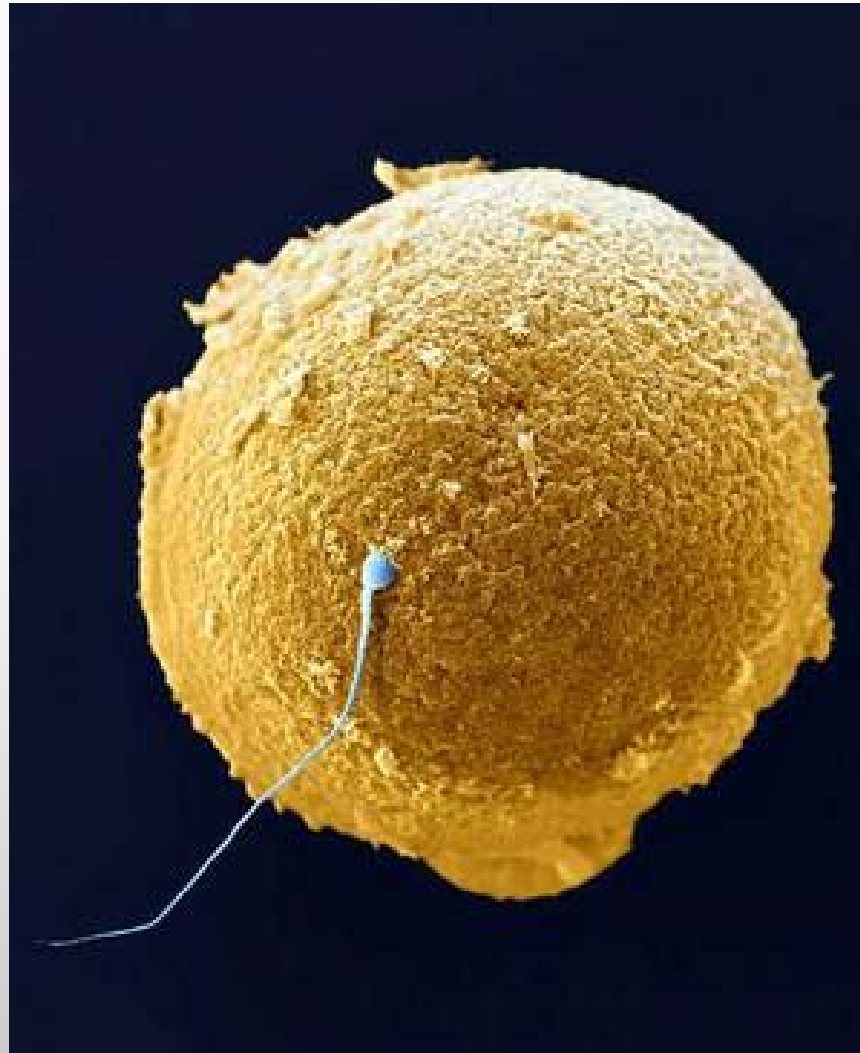
Trichomonosis

Campylobacteriosis

Vaccination : FMD



REPRODUCTIVE QUALITY



ANDROLOGICAL EVALUATION

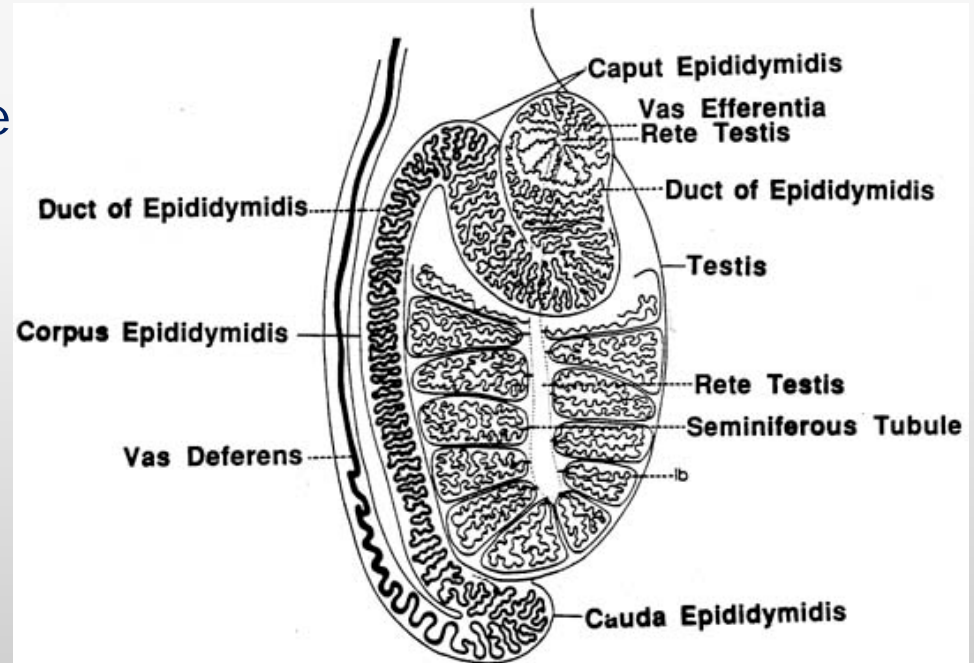
- ✦ Reproductive Tract Examination
- ✦ Ejaculates Selection



Reproductive Tract Examination

★ EXAMS:

- ◇ Legs and hoofs
- ◇ Prepuce
- ◇ Penis
- ◇ Seminal Glands
- ◇ Testicles
 - Scrotal circumference
 - Symmetry
 - Mobility
 - Consistency
 - Width
 - Length
 - Volume



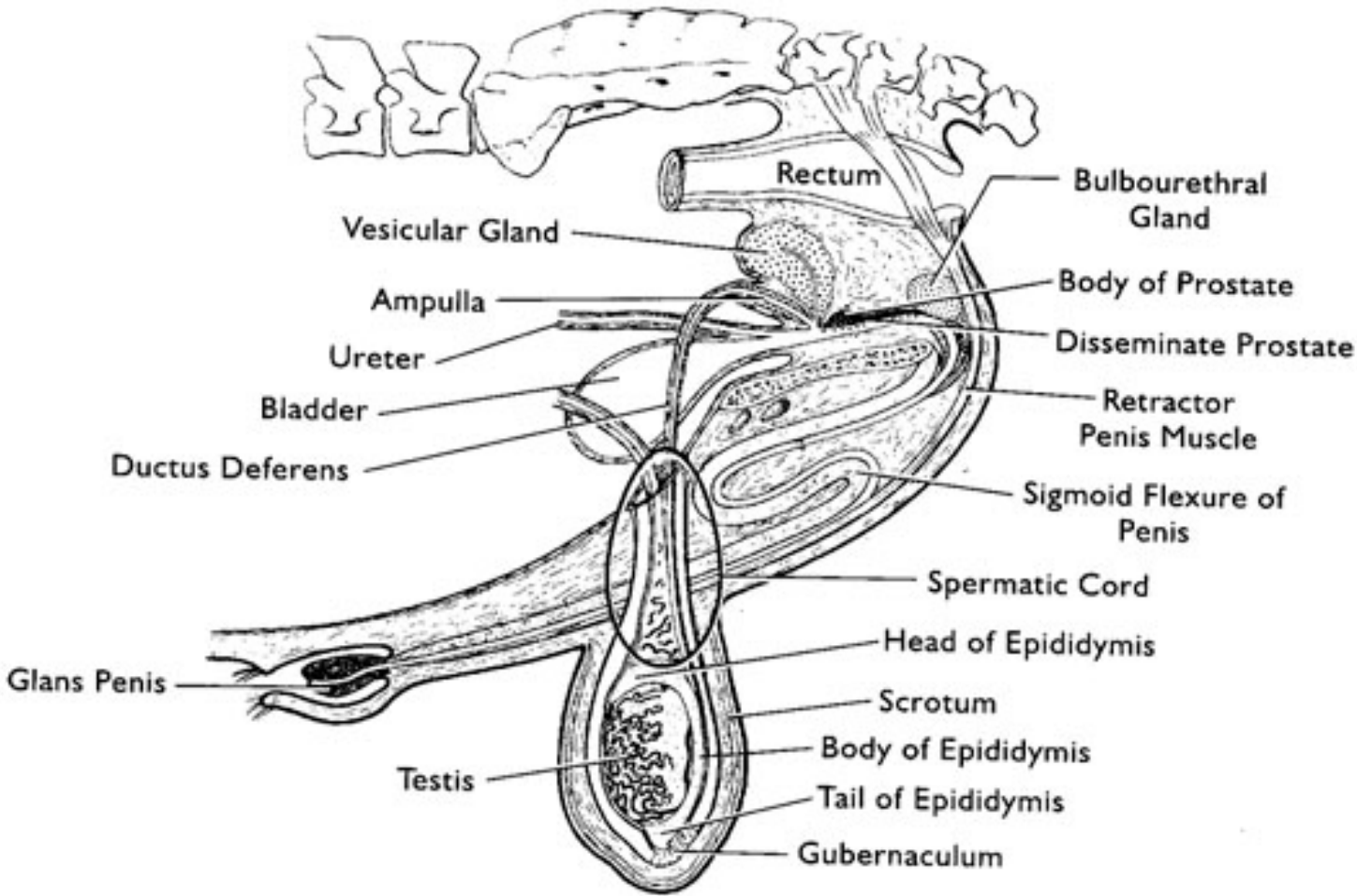


Prepuce

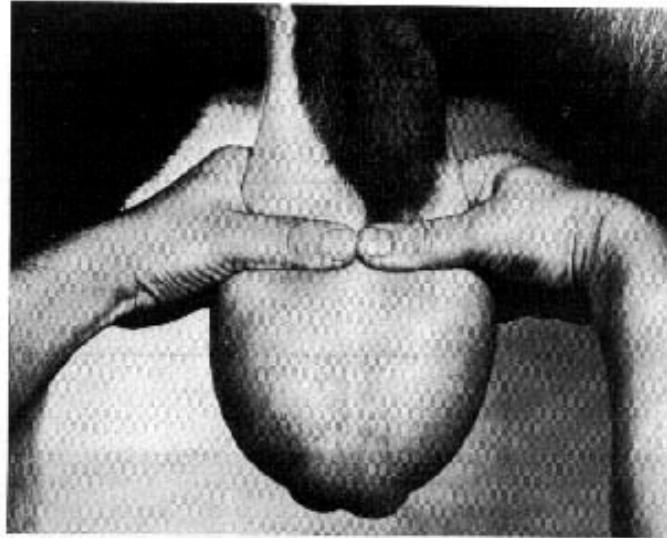
Penis



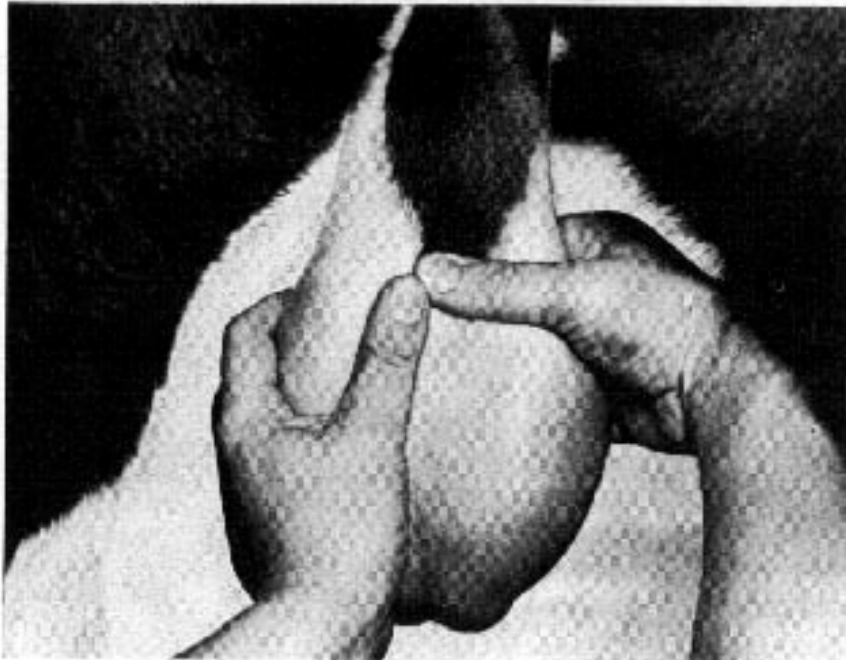
Seminal Glands



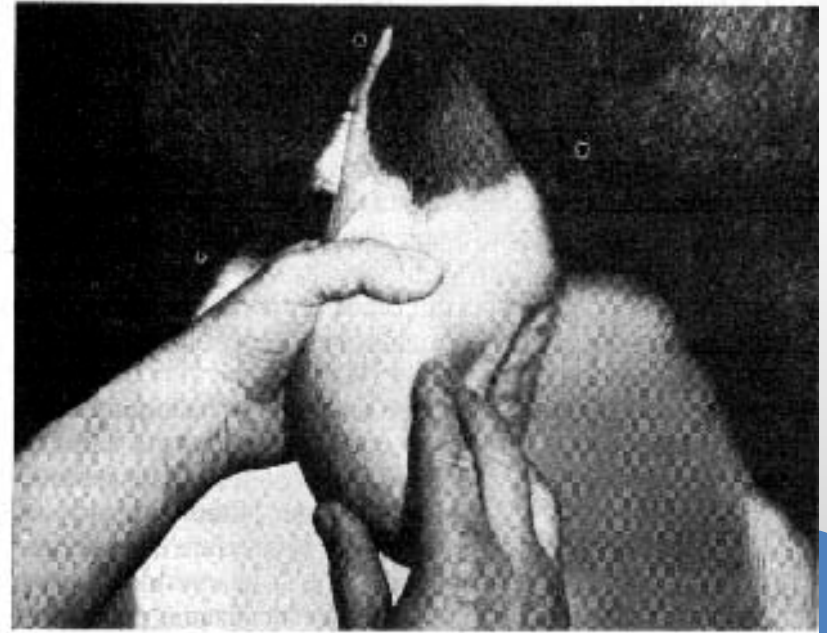
Testicles Evaluation



Simmetry



Consistency



Mobility

LENGTH

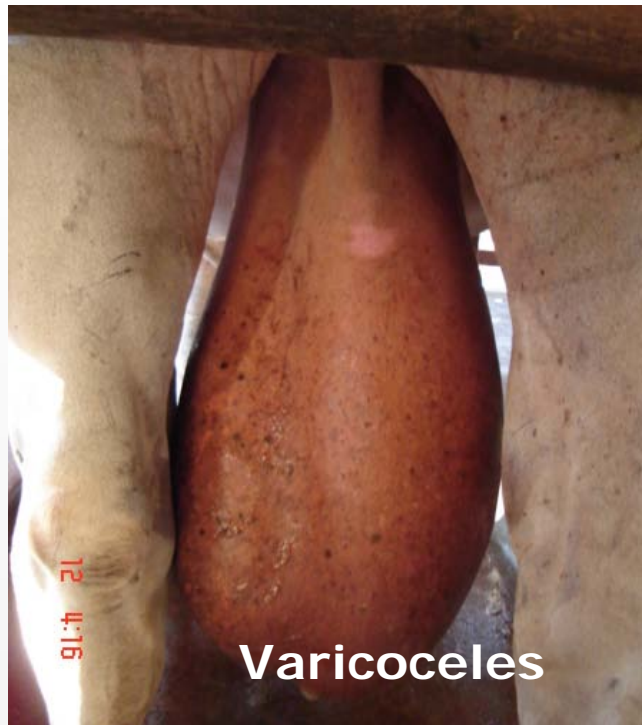


WIDTH

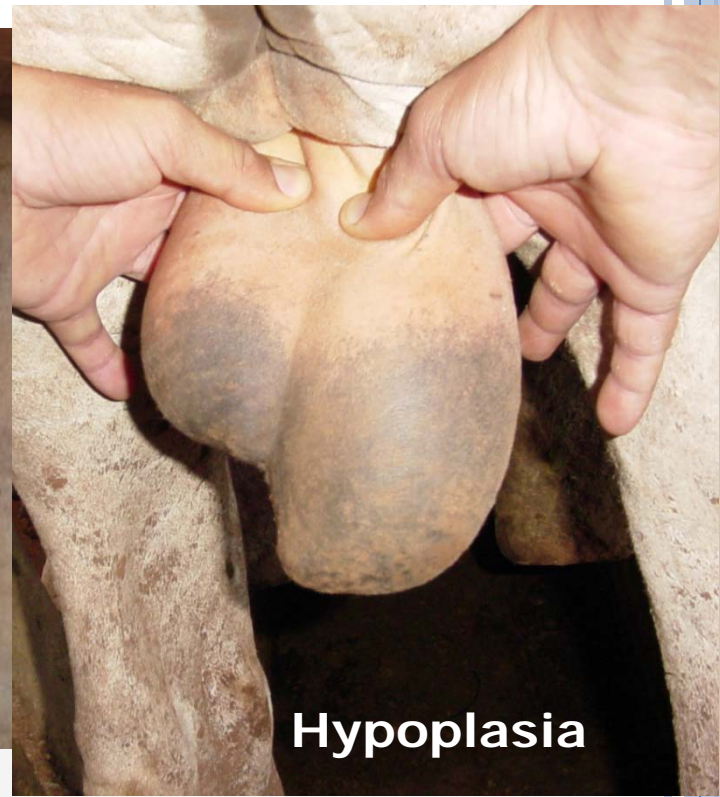




Degeneration



Varicoceles



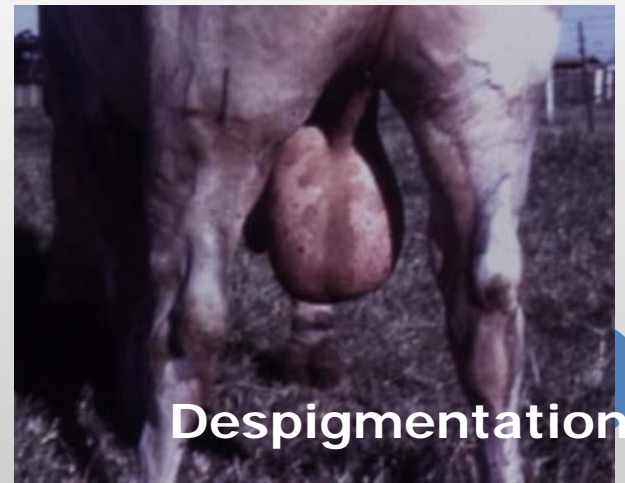
Hypoplasia



Orchitis

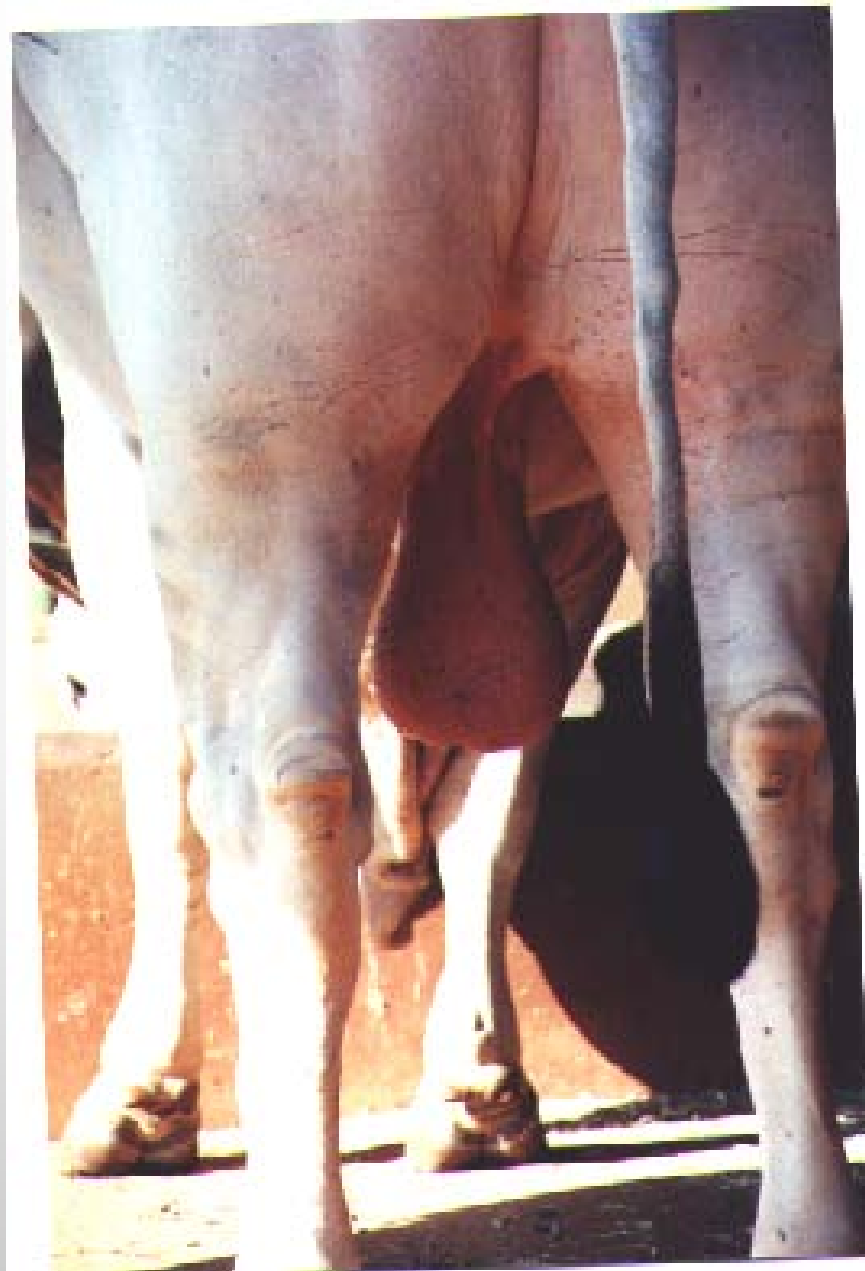


Atrophy



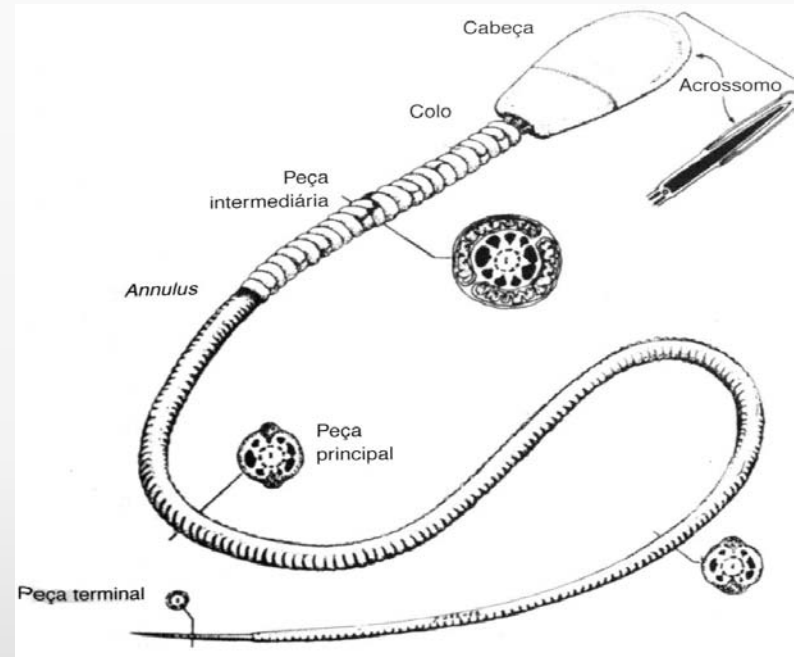
Despigmentation

Mature Bulls



Ejaculates Selection

- ✦ Semen Collection
- ✦ Laboratorial Tests



COLLECTION

✦ BULLS

- it's important to keep the collection routine
- collection twice a week
- two-day-interval
- two jumps each day
- learn about the animal behaviour



COLLECTION

- **1- Preparation of Bulls**
- **2- Preparation of Dummy**
- **3- Preparation of Artificial Vaginas**
- **4- Excitation of Bulls (false jumps)**
- **5- Semen Collection**
- **6- Semen Industrialization**



Semen Collection with Artificial Vagina



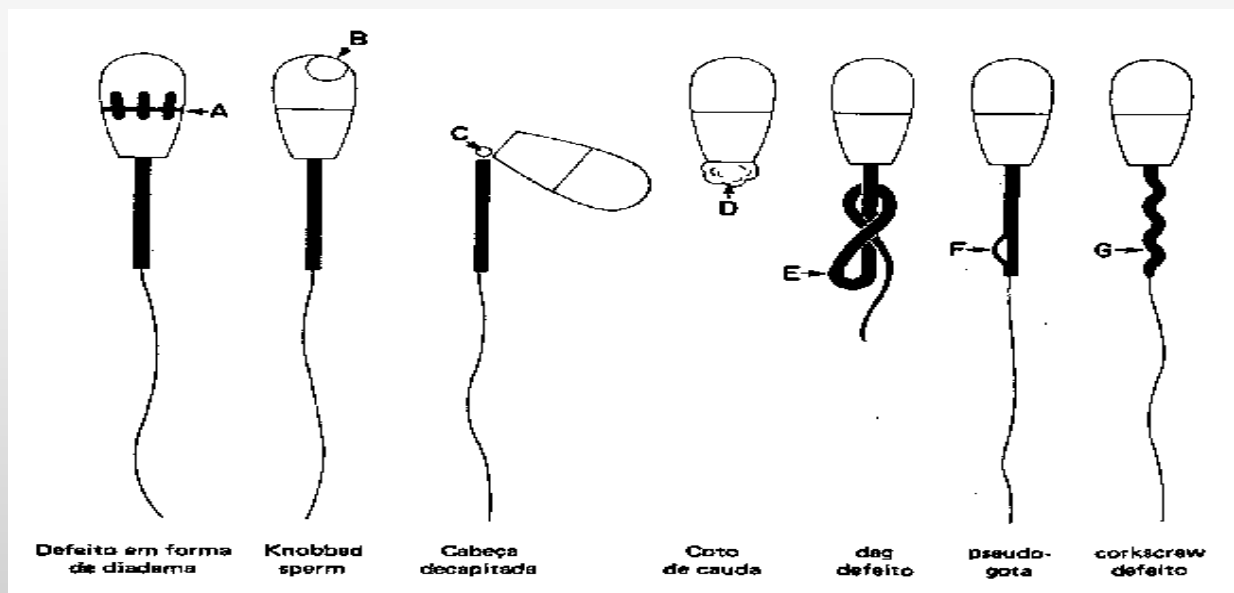
FIRST INSPECTION

- Volume (weight x mL)
- Spermatic Concentration ($\times 10^6/\text{mL}$)
- Motility (%)
- Vigor (0-5)
- Morphology (%)



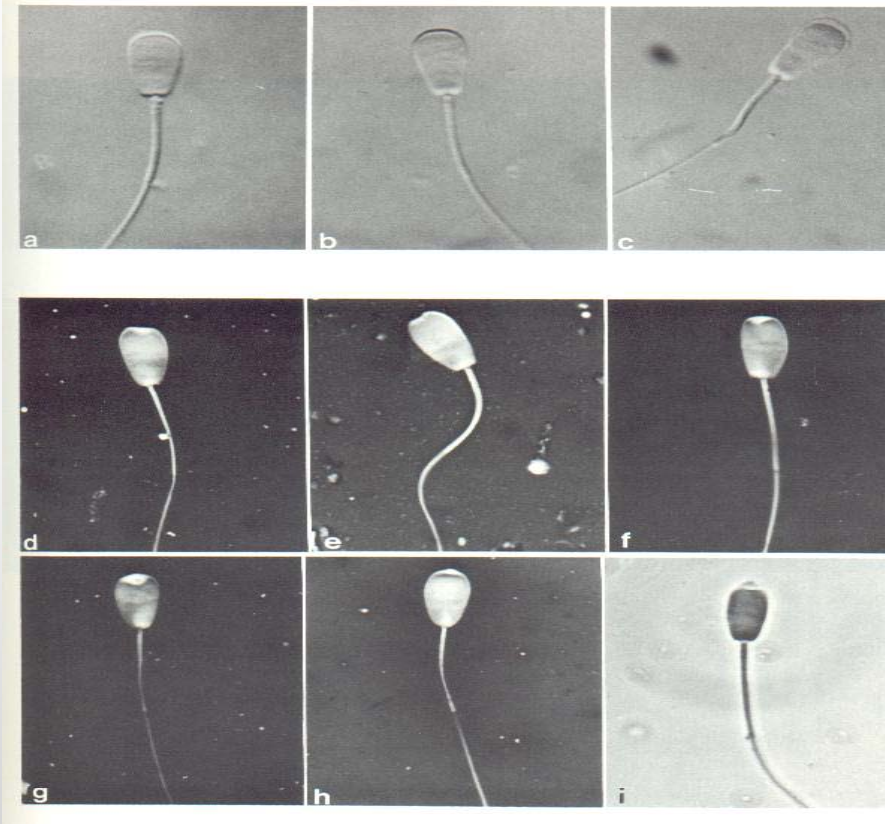
Spermatic Morfology

- Major Defects (20%)
- Minor Defects
- Total Defects (30%)

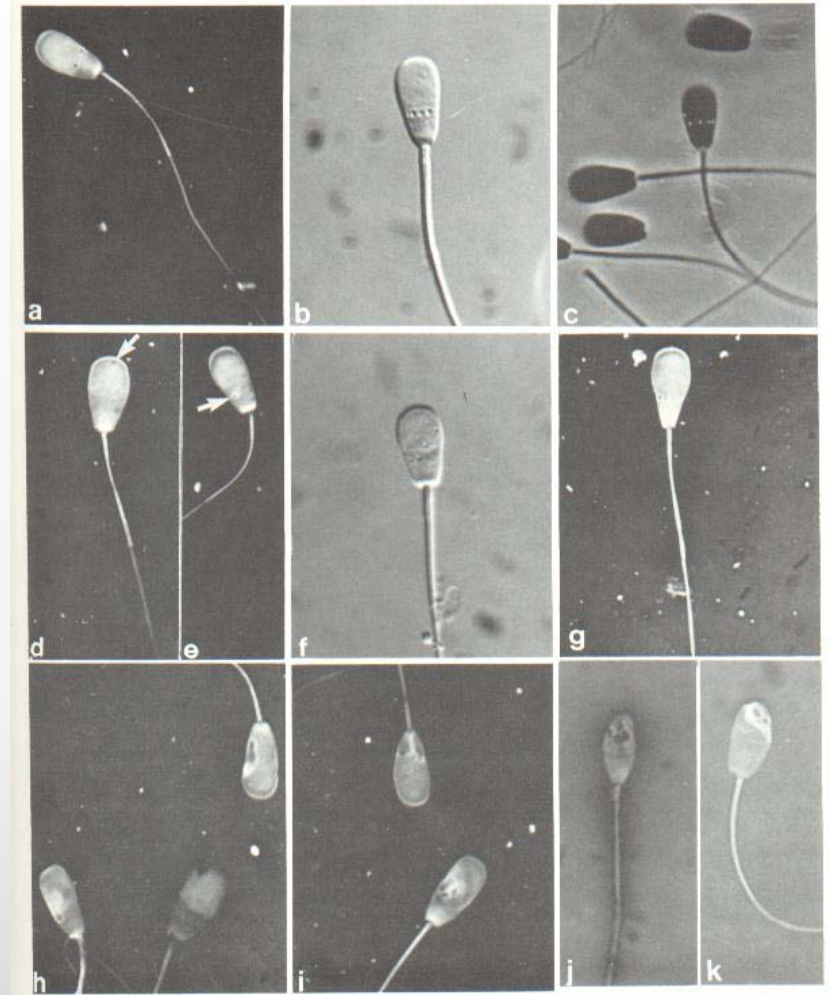


"Pouch Formation"

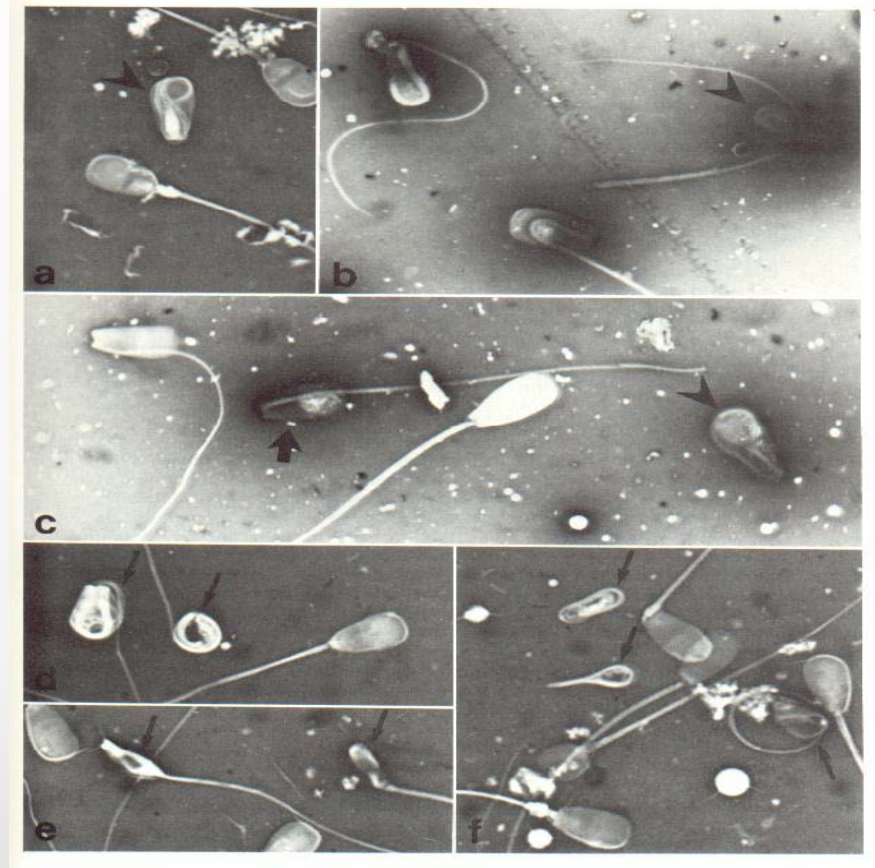
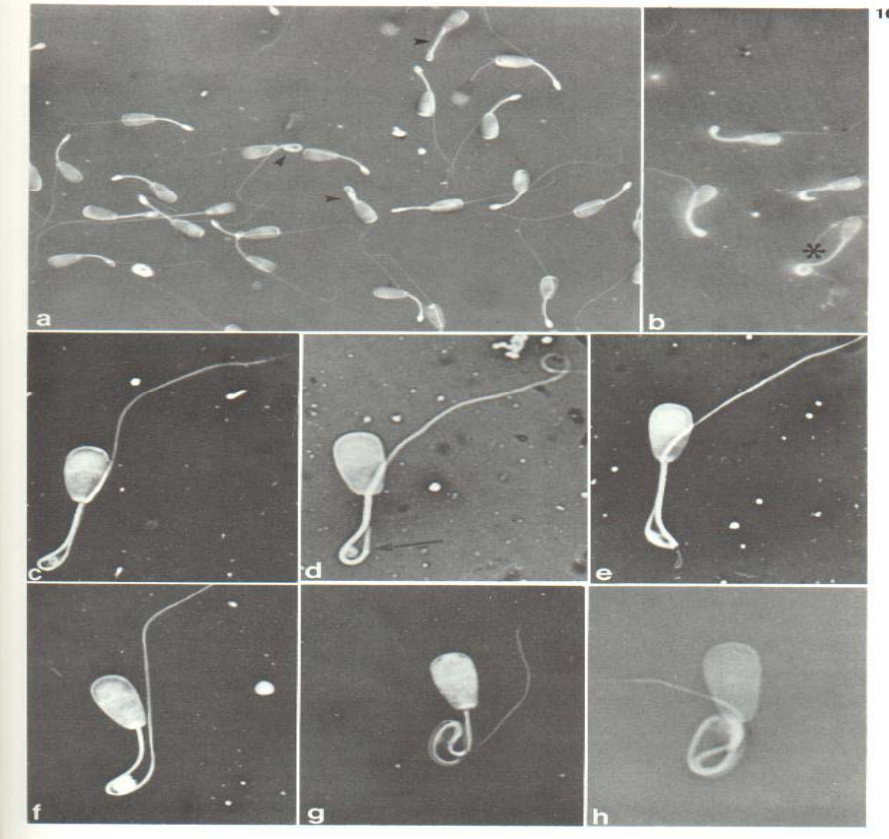
Normal



"Knobbed"



Teratoid forms



Distal midpiece reflex

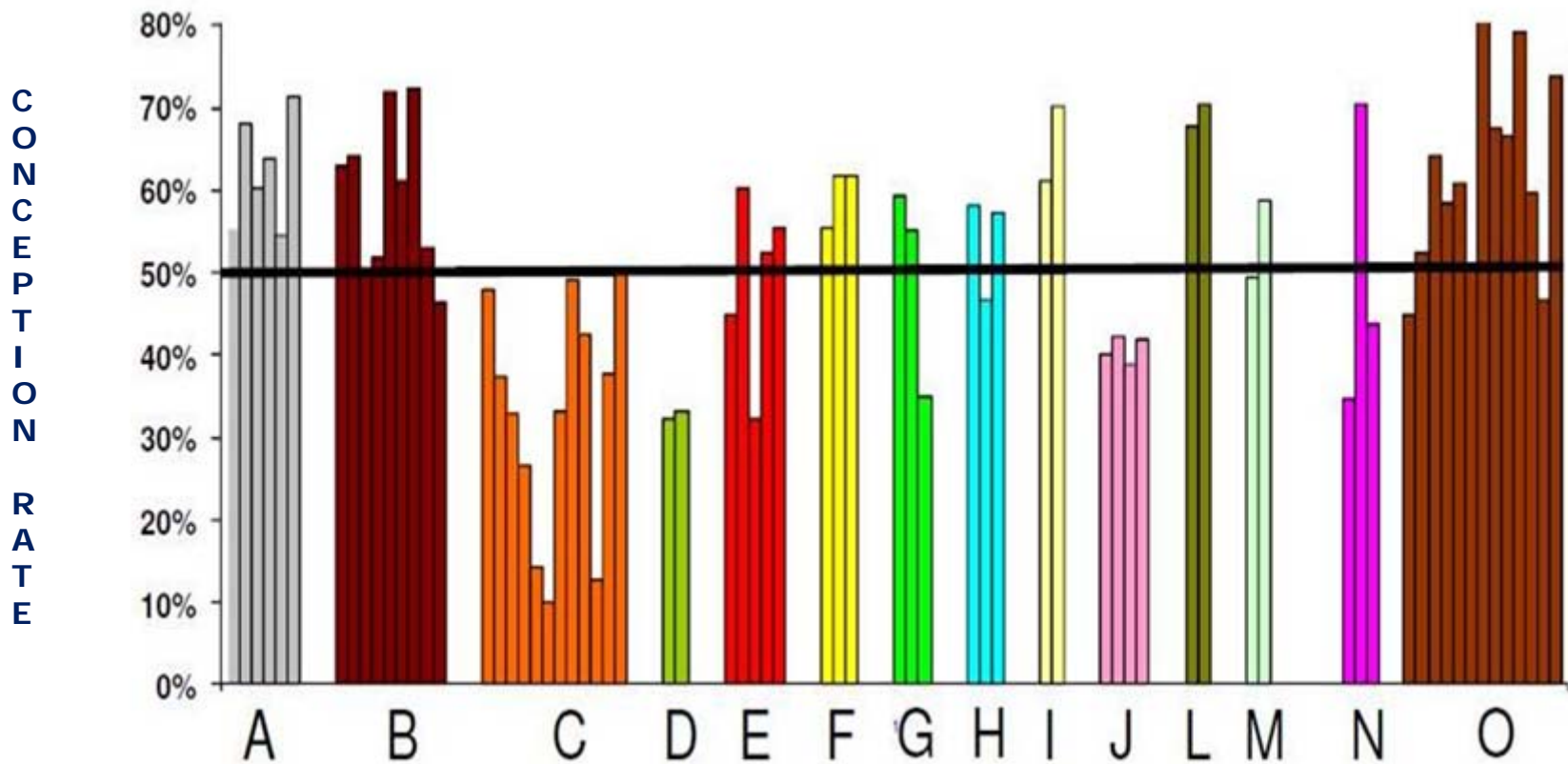


FINAL INSPECTION

- **Motility – 0h (thawing 35⁰ C)**
- **Motility – 3h (incubation 37⁰ C - 3h)**
- **PIA – 3h (pos-incubation)**
- **Bacteriology exam**
- **Virology exam (IBR)**

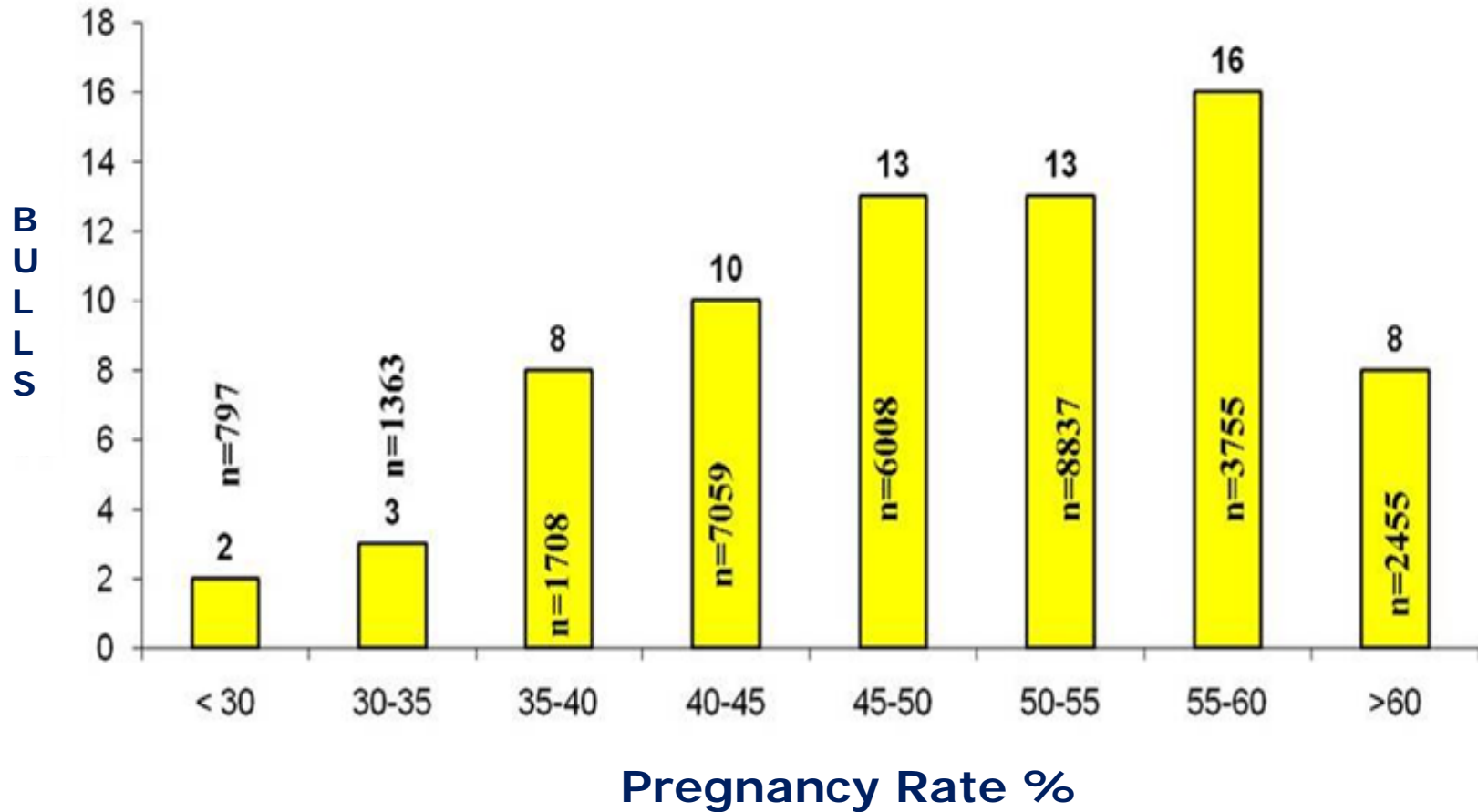


Conception rate distribution as the bull and semen batches (7.377 AI - zebu cattle)

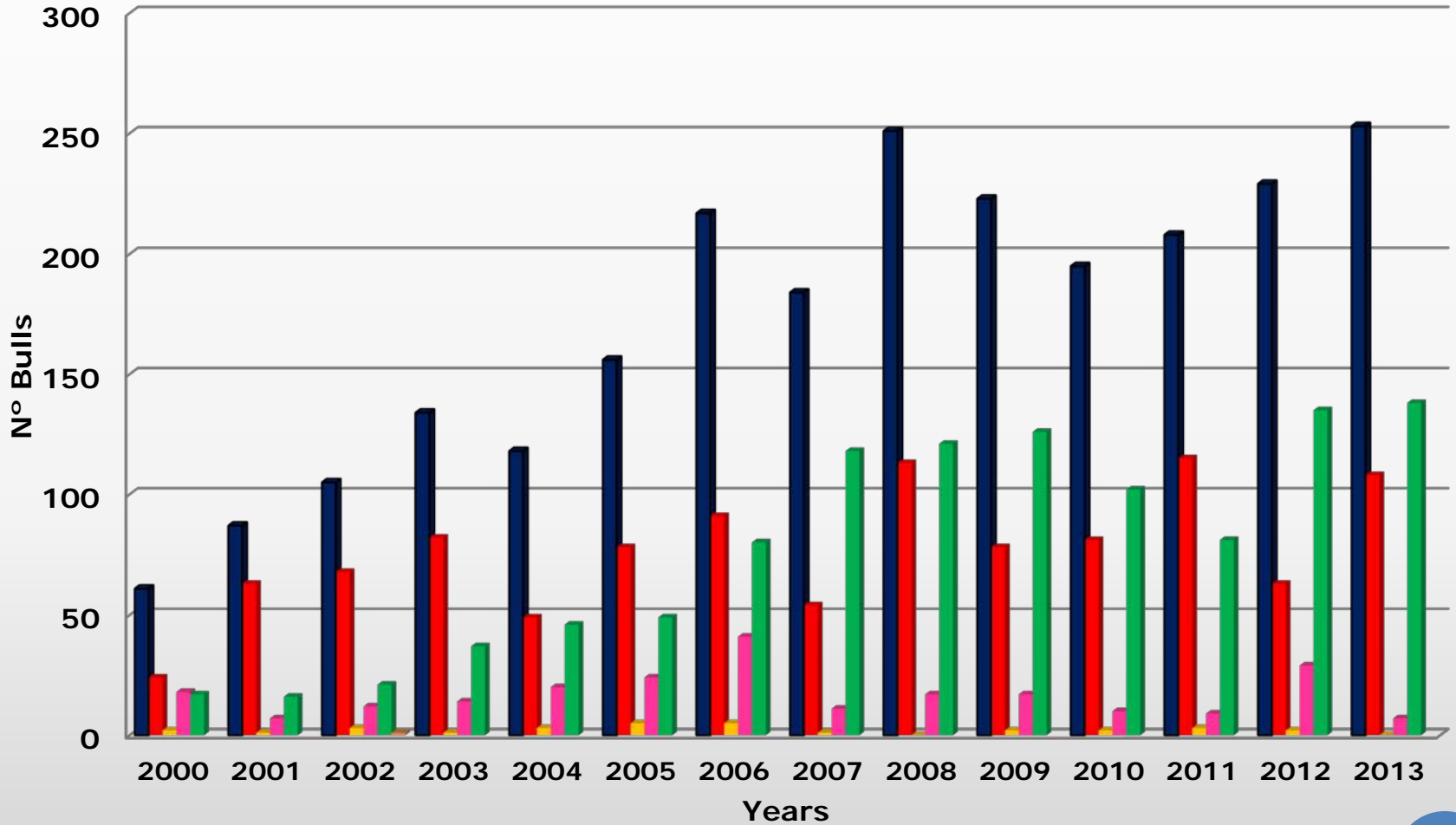


Bulls and semen batches

Effect of different bulls on the pregnancy rate in synchronized bovine females inseminated at fixed time (31.982 AIFT using 73 bulls)



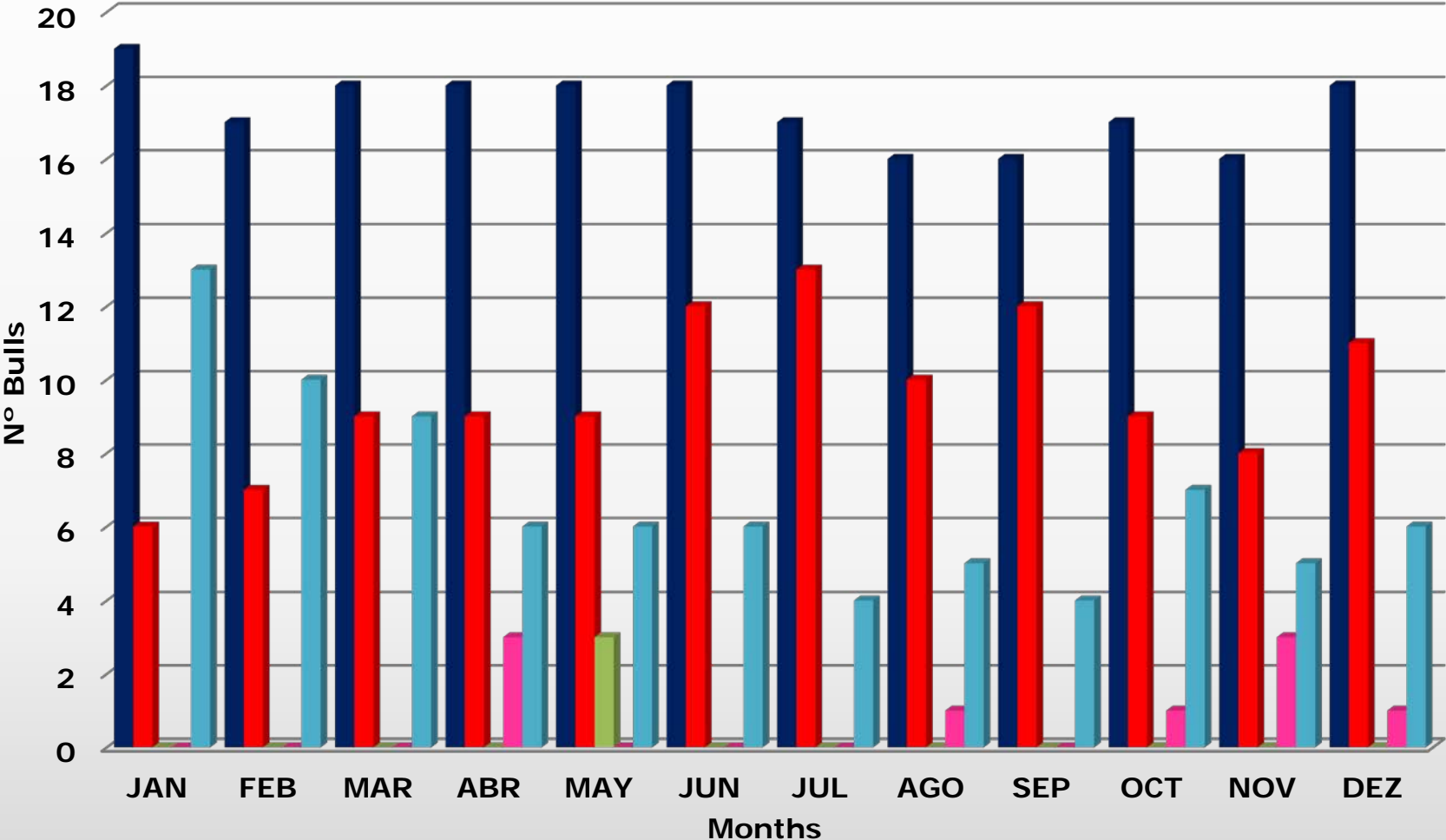
Gir Bulls Productivity



■ Total ■ Prod ■ r Mot ■ r Mor ■ r Mot/Mor ■ r Thaw



Gir Bulls Productivity

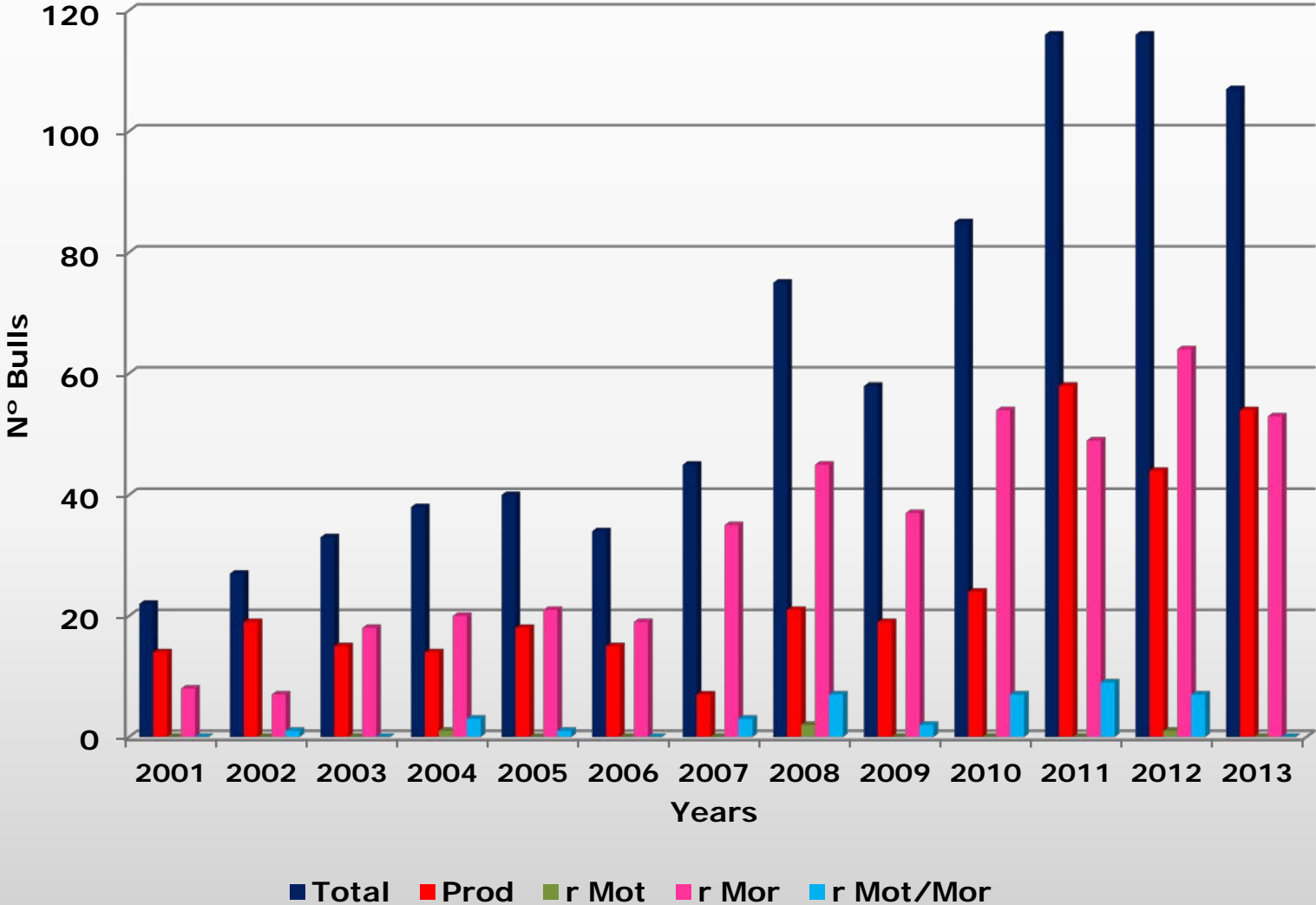


2011

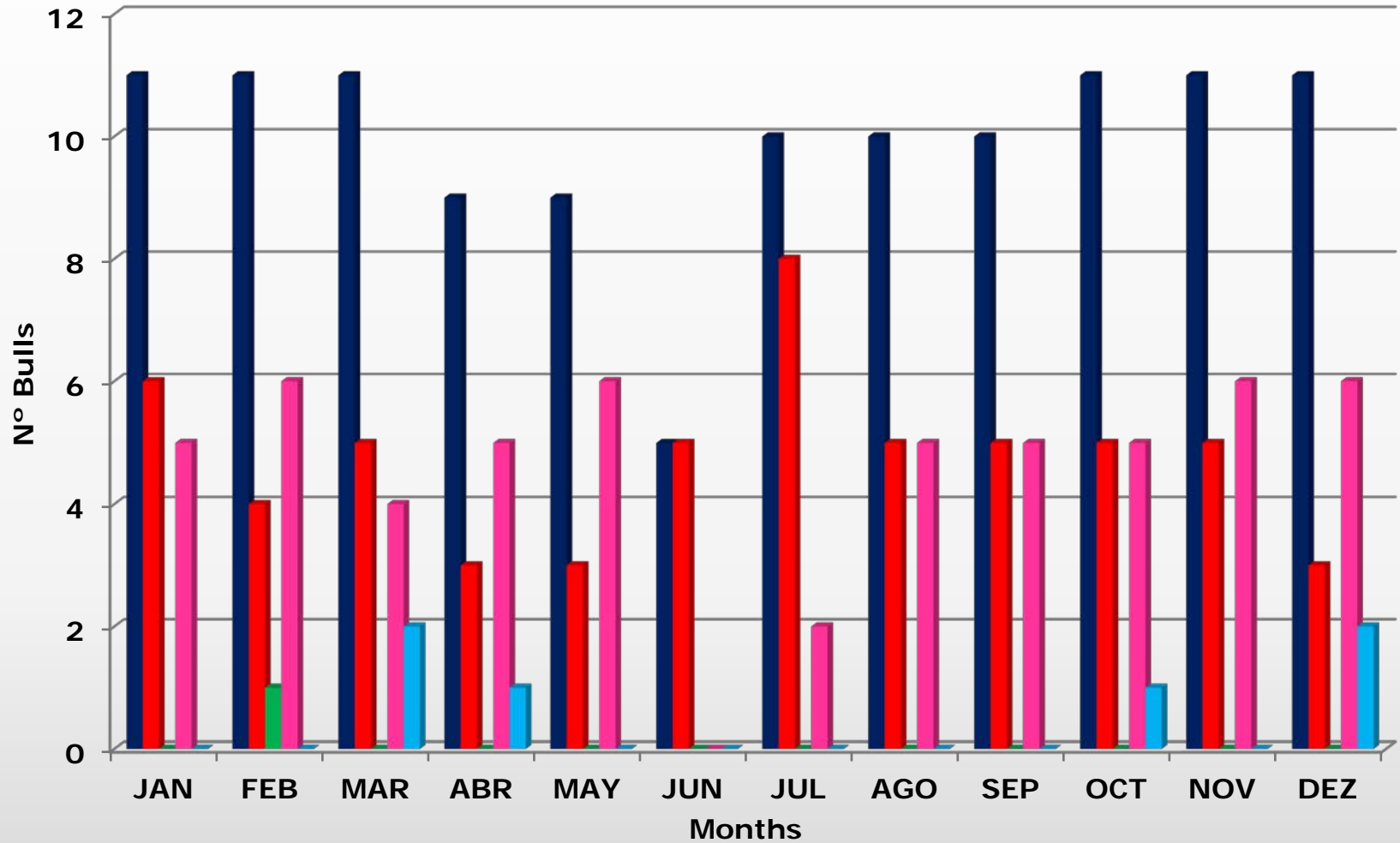
■ Total ■ Prod ■ r Mot ■ r Mor ■ r Mot/Mor



Girolando Bulls Productivity



Girolando Bulls Productivity

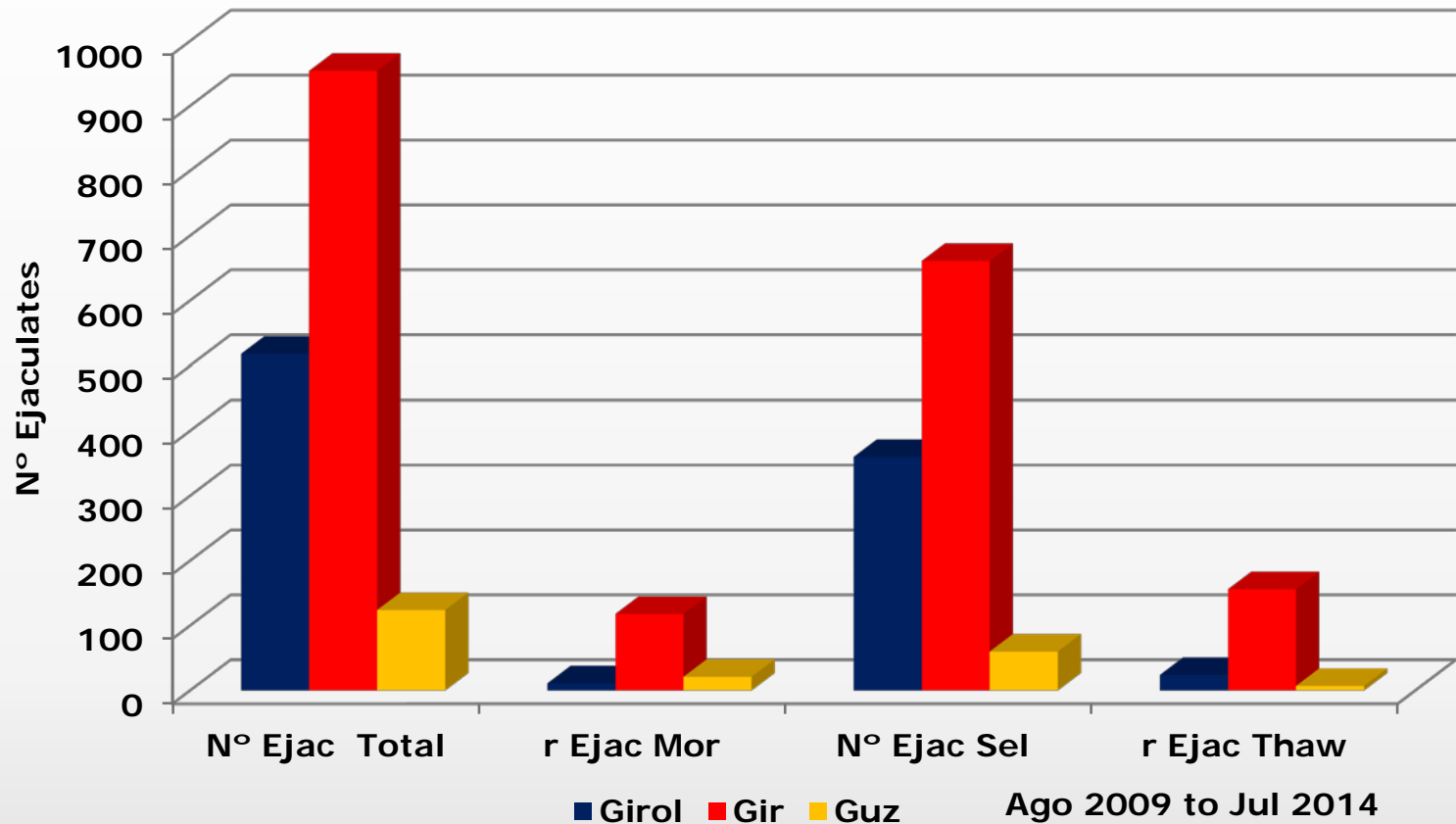


■ Total
 ■ Prod
 ■ r Mot
 ■ r Mor
 ■ r Mot/Mor

2011



Sorted Semen



Breed	N° Ejac Total	r Ejac Mor	N° Ejac Sel	r Ejac Thaw
Girol	518	11 (2%)	360	24 (7%)
Gir	954	118 (12%)	661	156 (24%)
Guz	124	21 (17%)	60	7 (12%)



Genetic Programs – Gir and Girolanda

Objectives: distributing frozen semen from selected animals for dairy production evaluation in their daughters.

Begin: Gir – 1985 and Girolanda -1997.

Gir: after results publication of the first bull group (1993) the semen sales increased 35% in relation to the previous year and this was reflected in an increase in national production of more than 350 million Kg of milk. This year was published the result of the proof of the group number 22.

Girolanda: Currently is the best selling semen breed in Brazil (more than 544.000 in 2013 – increase of 33% in relation to 2012). Increase in milk production in first lactation cows (year 2000 – 3.657 Kg/305 days to 2013 - 4.534 Kg same period. Increase of 19,4%)



ABCGIL - INFORMATION

- Number of animals selected for Progeny Test in the last 8 years	420 bulls
- Average age of the animals	27 months
- Number of animals tested that had frozen semen for Progeny Test	328 bulls
- Reason for rejections	Quality of the semen
- Beginning of the realization of the pre-tests	5 years
- Number of animals submitted to pre-test	302 bulls
- Minimum criteria for approval of GIL young animals to enter Bull Centers with the purpose to freeze semen	Be approved to freeze semen and get the end index (andrological evaluation) of at least 60 points
- Criteria for semen quality and andrological evaluation	Freeze Semen (high quality) and CAP above 70 points
- Handling raising of young animals before moving on to the pre-test	Each young bull has a different management according to their farms

CAP = Andrological evaluation by points

Andrological Evaluation by Points = CAP

Classification	Excelent	Good	Regular	Weak
Esperm. Mot				
Mass 0-5	5	4 to 5	4	0 to 3
Individual	>70%	60-70%	50-60%	< 50%
Total points	20	12	10	3
Esperm. Morph				
Major Def %	<10	10 to 19	20 to 29	>29
Minor Def %	<25	26 to39	40 to 59	>59
Total Points	40	25	10	3
Scrotal Circ.				
Age (month)				
12 to 14	>34	30 to 32	30	<30
15 to 20	>36	31 to 36	31	<31
21 to 30	>38	32 to 38	32	<32
>30	>39	34 to 39	34	<34
Points	40	24	10	10

AMERICAN Theriogenology (1976), Chenoweth(1980), Vale Filho (1988)



Satisfactory= 60 -100 points , Questionable 30 -59 points , Unsatisfactory= < 30 points

GIROLANDA - INFORMATION

First Pre-Test (2013) – 59 animals were tested and only 27 (46%) were approved as TOP in reproductive evaluation

Second Pre-Test (2014) – 75 animals were tested and only 31 (41%) were approved as TOP in reproductive evaluation

Cross : 5/8 Hol+3/8 Gir ; 3/4 Hol+1/4 Gir and Pure Synthetic

Age: 21 to 43 months and 384 Kg (minimal)

Approved : CAP > 50 points

The andrological evaluation allows to detect several types of developmental abnormalities of the genital tract, in the quality and sperm cryopreservation, the disturbances in libido and mating ability, these changes that lead to failure of fertilization, presenting situation of male infertility or sub fertility.



Environmental Quality

Animal Welfare



- nutrition
- Animal management



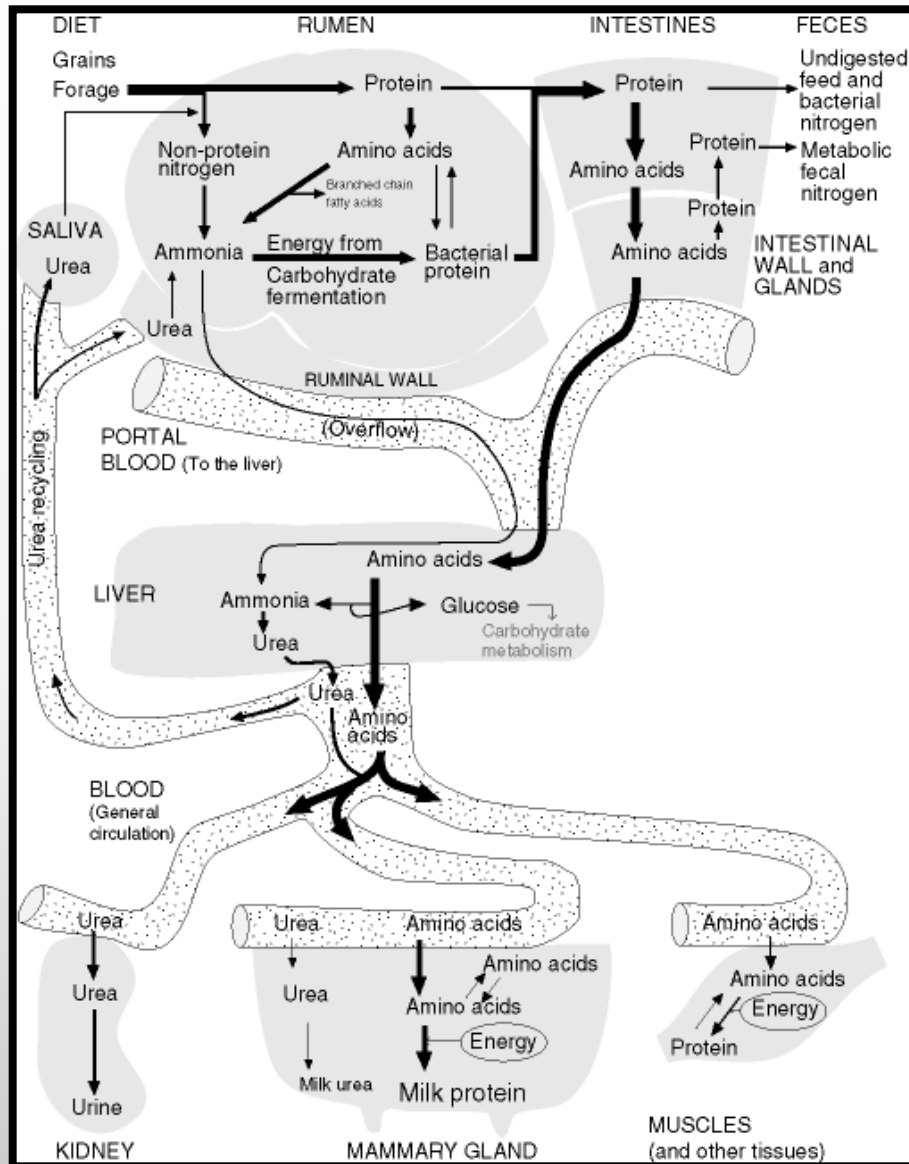
A close-up photograph of a horse's lower leg and hoof. The horse's coat is light-colored, possibly white or cream, with some darker patches. The hoof is dark and appears to be on a dirt or straw-covered floor. The word "NUTRITION" is overlaid in large, bold, black capital letters across the middle of the image.

NUTRITION

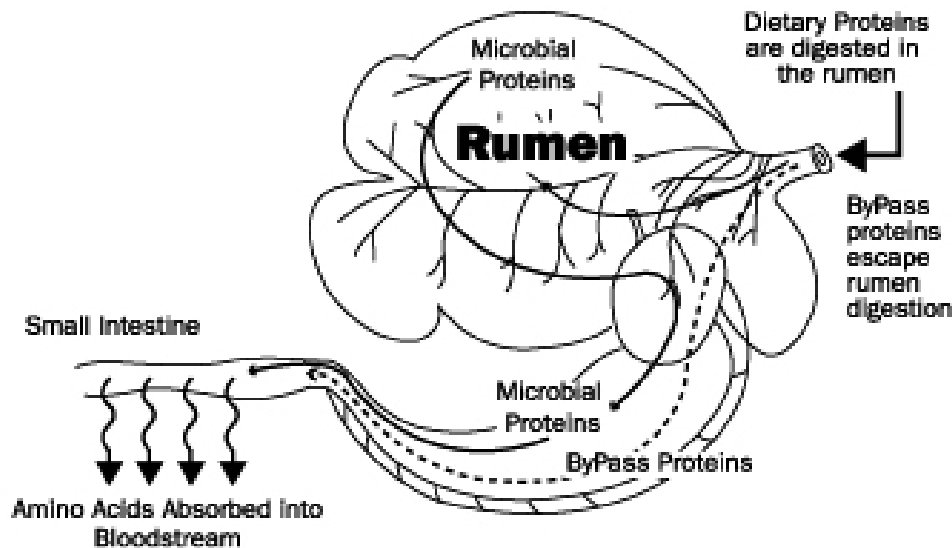
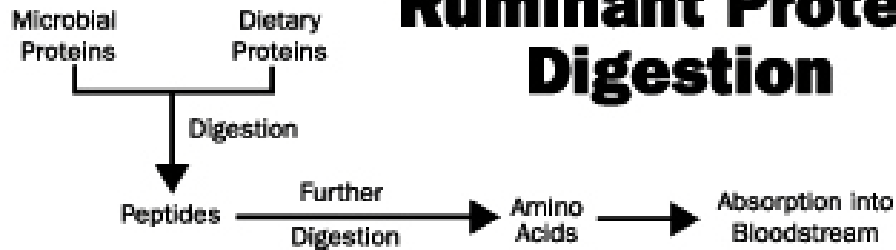
"Good sperms in a good body"

RUMINANTS NUTRITION

The ruminant nutrition is quite complex because its involve physiologic and biochemical principles. Is necessary to optimize the rumen activity to produce semen with the best quality and quantity.

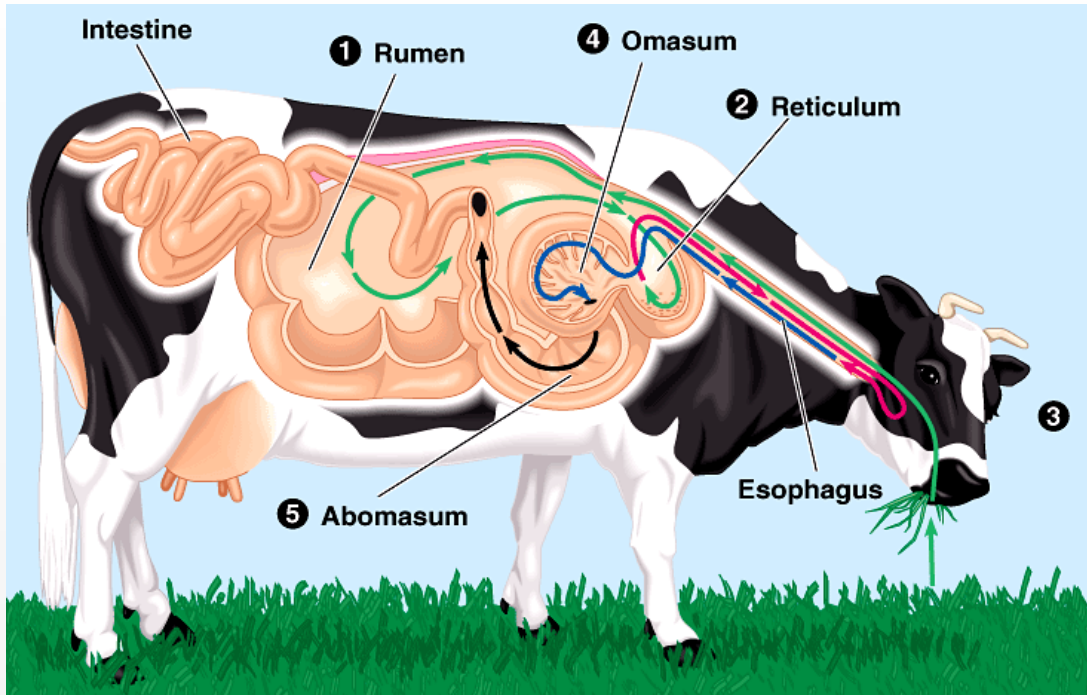


Ruminant Protein Digestion



If the nutrients of diet (energy, protein, vitamins and minerals) are ideal to improve the animal production, the problem is to control the excess of degradable intake protein.





**It is
important to
keep the
animal
physiology in
balance.**

No stress

Good Health

High production

High quality



Variables to bull Nutritian Formulation

- Breed
- Age
- Body Condition (score 1-9)
- Behavior
- Objective (Maintenance or Growth)
- Semen Quality
- Nutritional history
- Season (cold or hot)
- Animal Stress
- Nutritional levels of feeds



Feeds in Bull Nutrition

- Hay (*Cynodon spp*)
- Corn Silage
- Commercial Concentrate
- Soybean meal
- Mineral Supplement
- Pumpkin (β Caroten Natural Supplement)
- Oral Vitamin Supplement

Nutritional Quality of Feeds

- Twice a month



Nutritional Management

- **Diet fractioned twice a day**
 - .Morning
 - .Afternoon

Animal Categories

- **Two Animal Categories**
 - .Growth (Age < 36 months)
 - .Maintenance (Age > 36 months)



MANAGEMENT



Ample work space and wooded





Trust

Quiet and calm





**Comfort,
Bath, Cleaning**

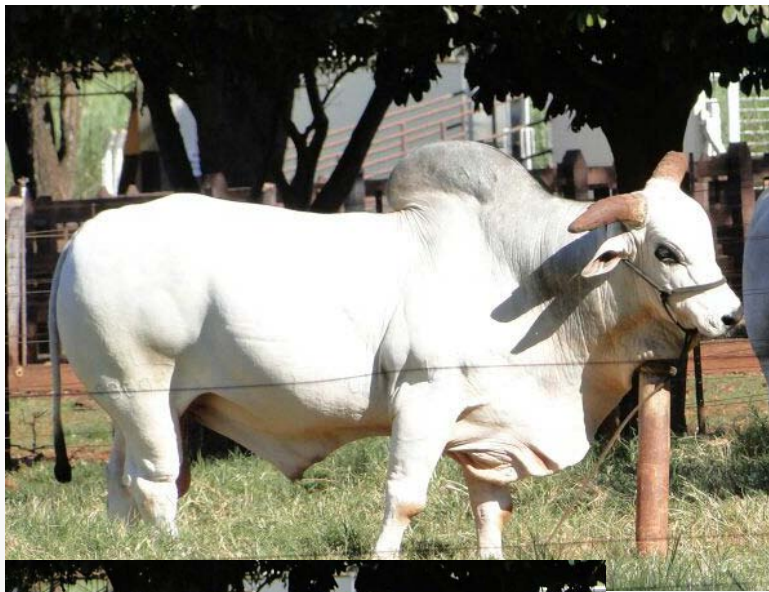


Relax





Control of temperature and humidity



No stress



SUMMARISING

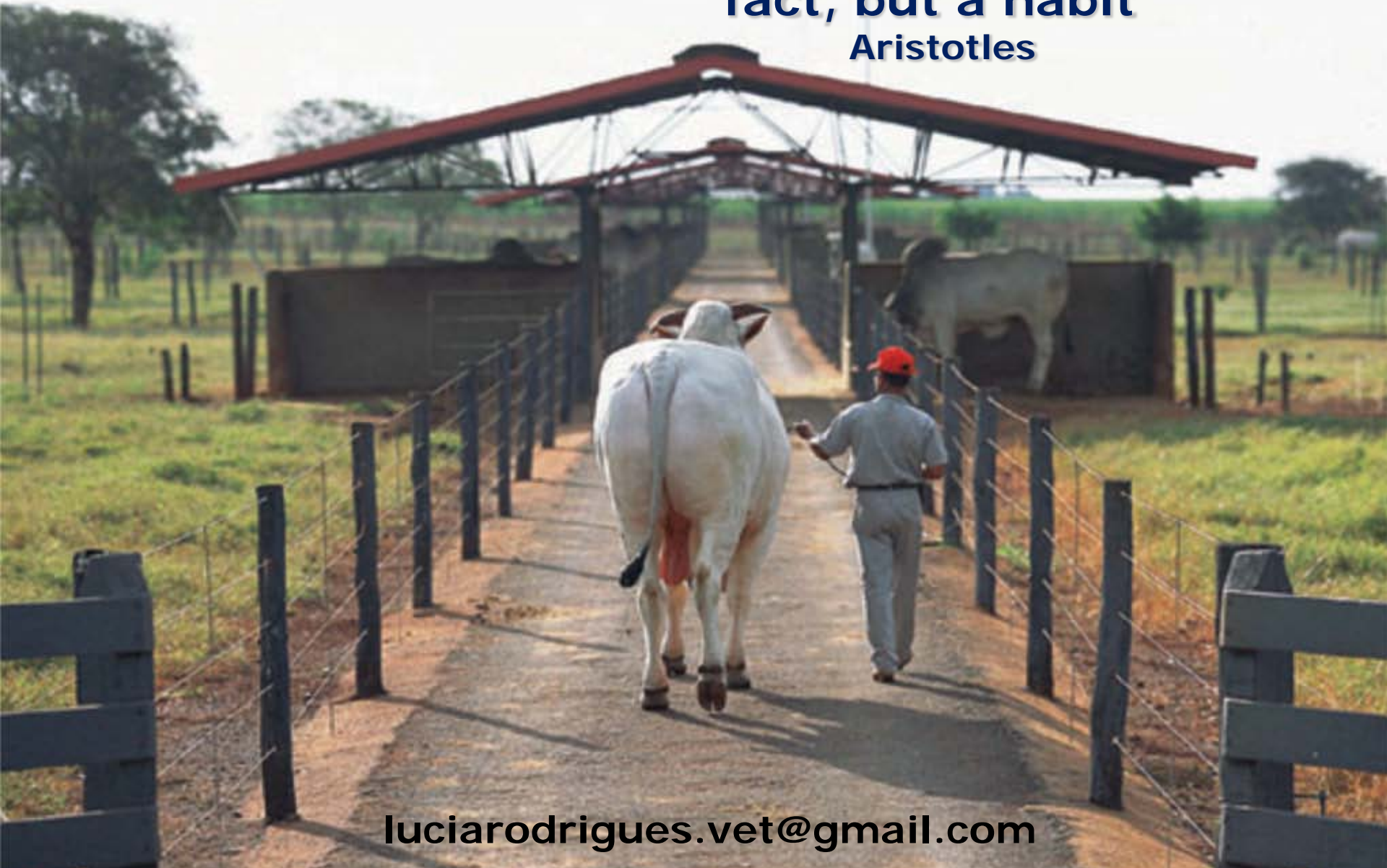
- Focus
- Criterion
- Commitment
- Training
- Goals
- Trust
- Quality
- Love



SUCCESS



**"We are what we repeatedly
do, therefore, excellence is not a
fact, but a habit"
Aristotles**



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