

**M-BoSs project “Out scaling of community-based breeding programs:  
attractive and innovative approach to improving the lives of smallholder  
producers in low input systems”**

**TALIRI – Kilimanjaro, 4-6 January 2019**

# Reproduction of Sheep and Goats: Fecundity Improvement Packages

---

Dr. Mourad Rekik [M.Rekik@cgiar.org](mailto:M.Rekik@cgiar.org)



# Control Means

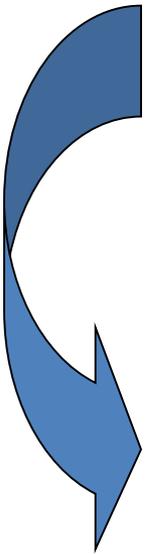
---

- 🌸 Introduction
- 🌸 Synchronisation of oestrus and induction of ovulation
- 🌸 Natural method
- 🌸 Hormonal treatments
- 🌸 Improvement of litter size

# Physiological causes of reduced reproductive efficiency in sheep and goats

- Long seasonal anoestrus : 2-6 mois
- Pregnancy: 5 months
- Postpartum anoestrus: 1-3 months
- An inherent low prolificacy

In most production systems, sheep and goats give birth once a year, produce single litters and the production is seasonal.



# Improvement of fertility

---

Control over the events of the oestrous cycle

Breeding season



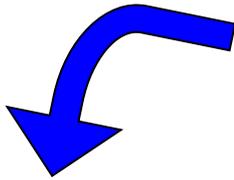
Synchronisation

Anoestrous season



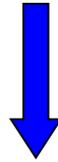
Induction  
Synchronisation

Mating Synchronisation  
Lambing Compactness



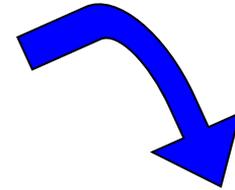
**CHOOSE**

The best  
mating time  
(Maximise  
fertility)



**ADJUST**

Nutritional  
requirements  
and provision  
from cheap  
natural feed

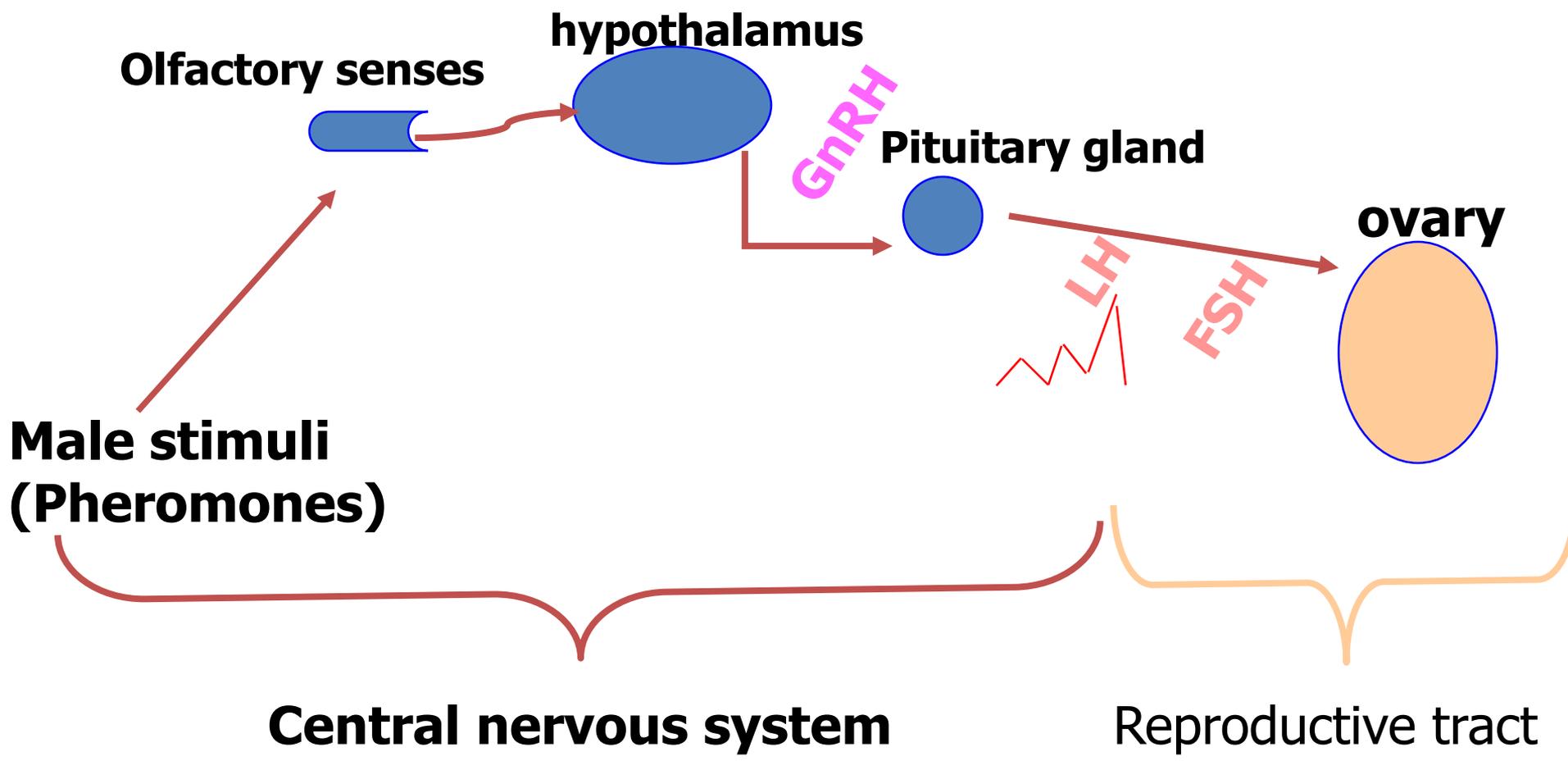


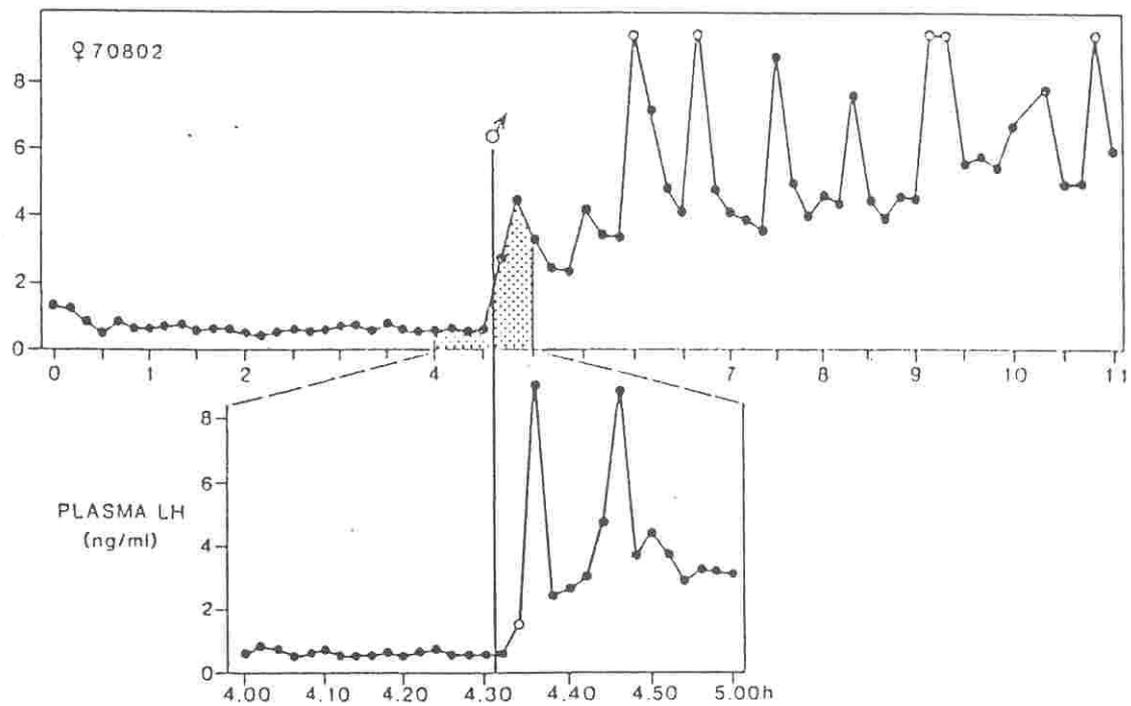
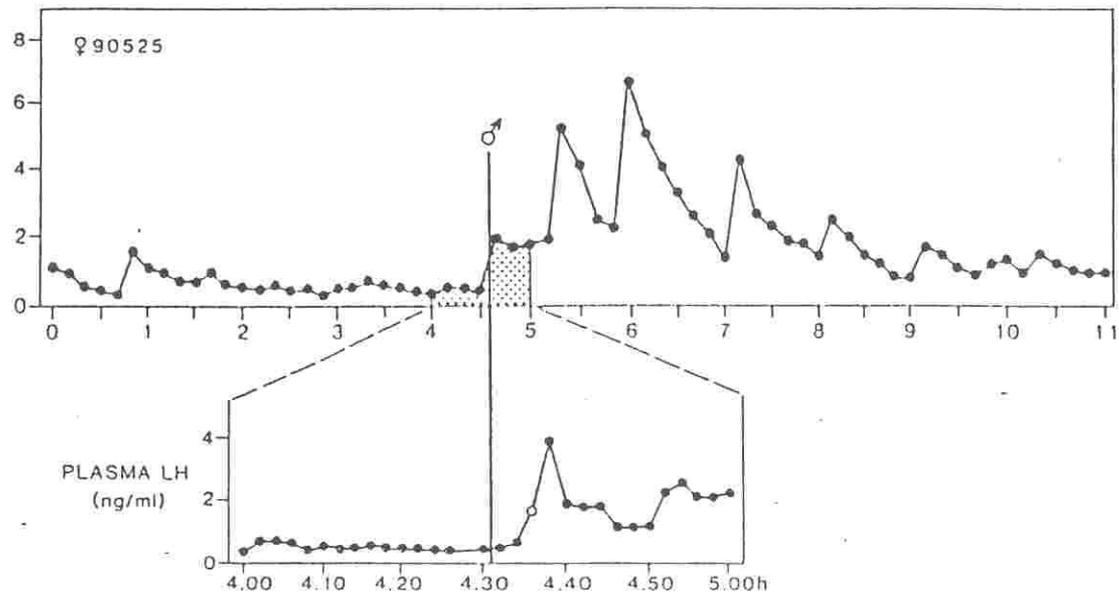
**PRODUCE**

According to the  
market  
requirements and  
to access  
improved genetics

# Natural method: The «male effect»

## How it works

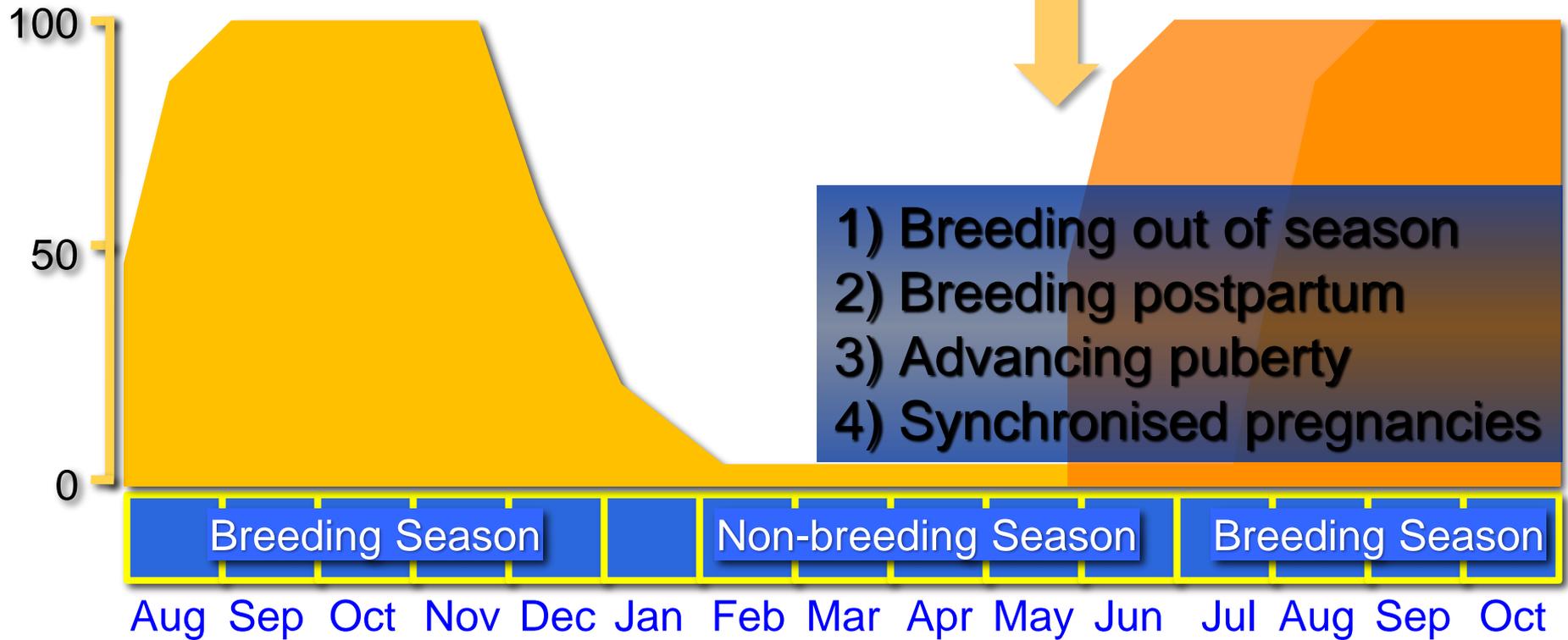




# Socio-sexual responses in goat and sheep



% Females ovulating

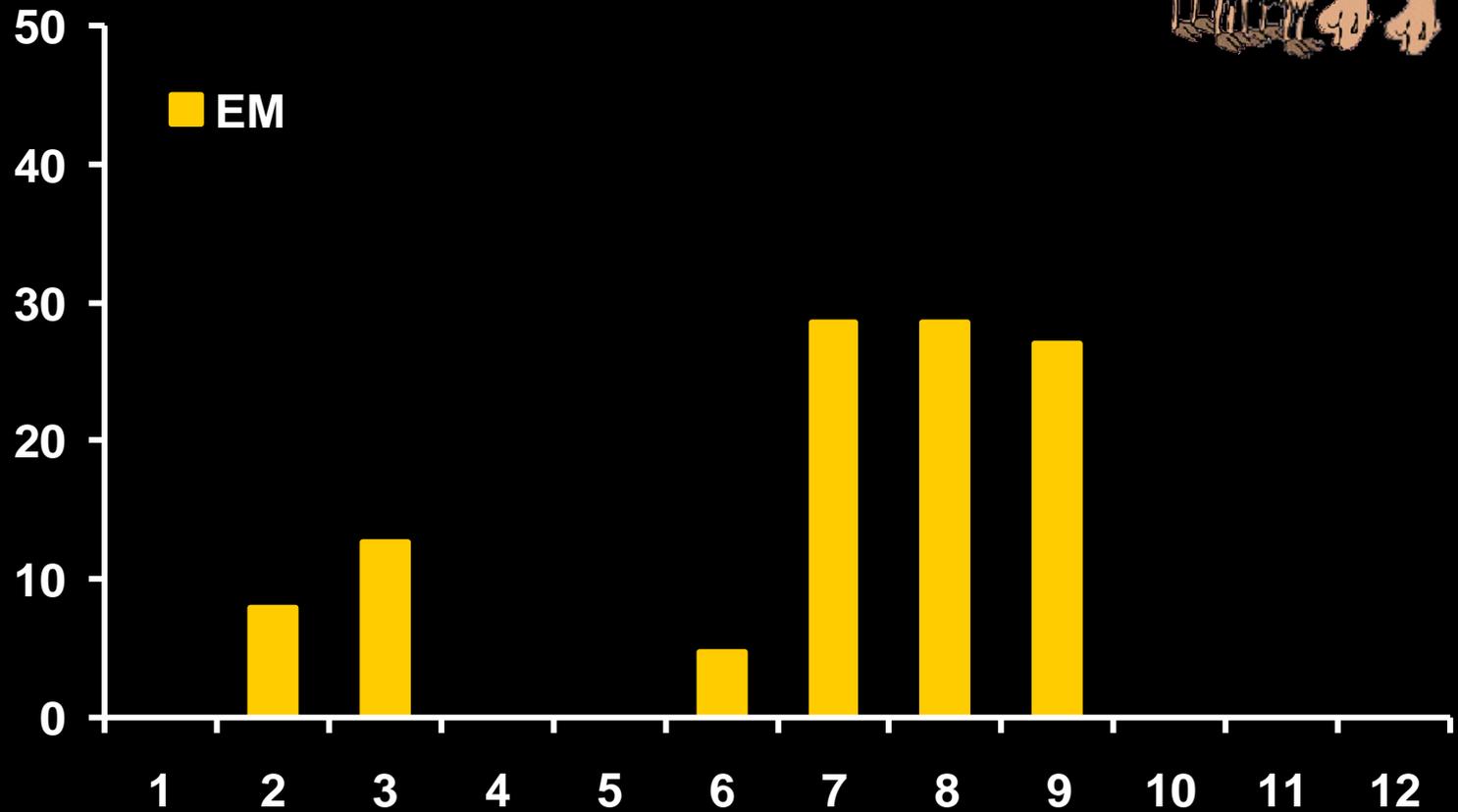
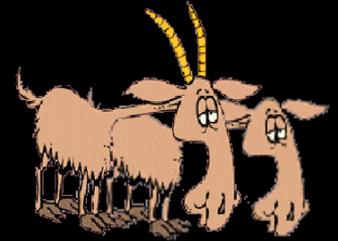


## Variation Factors

- **Age** : Maiden/Adults (75 % vs 95 %)
- **Breed** : Temperate/Meridional
- **Season**
  - Stage of seasonal anoestrous
  - Association seasonal and postpartum anoestrous
- **Body condition** : Females in depressed BC do not respond
- **Male sexual aggressiveness**: sex ratio and maturity

# MALE EFFECT IN GOATS

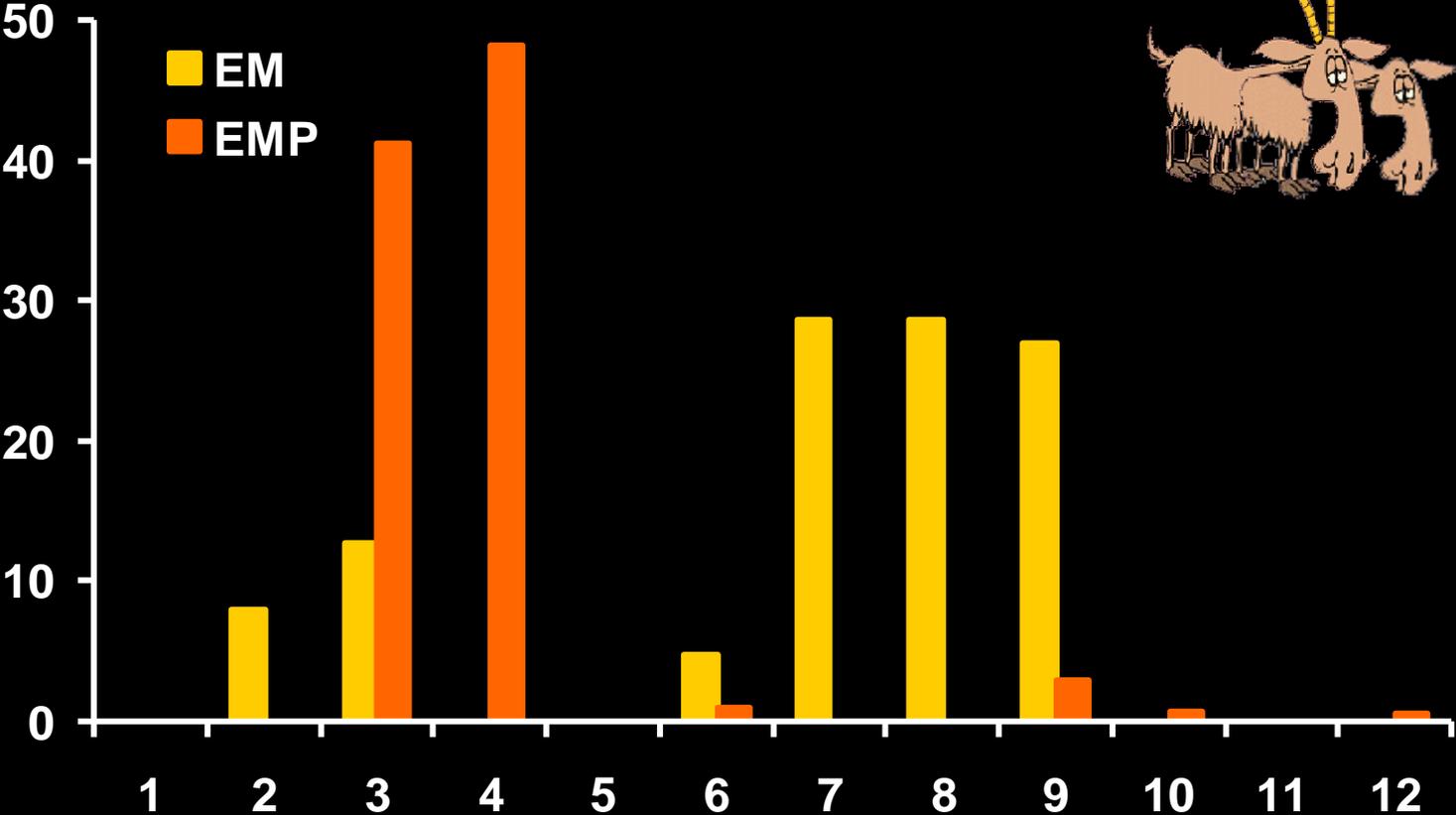
## APPEARANCE OF OESTRUS



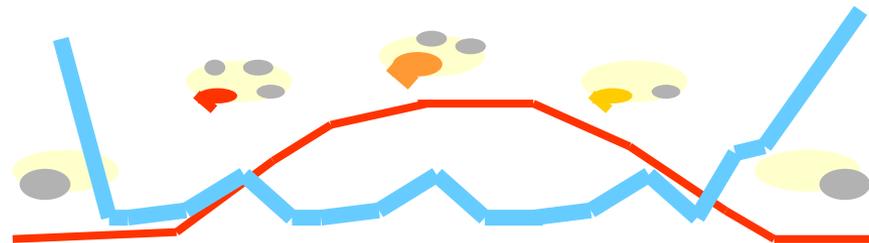
# MALE EFFECT



# MALE EFFECT



# INDUCTION AND SYNCHRONIZATION OF OESTRUS AND OVULATION



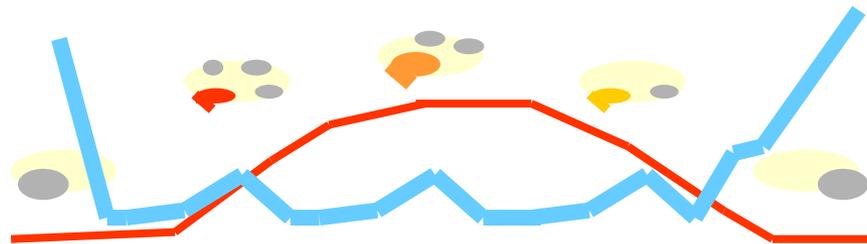
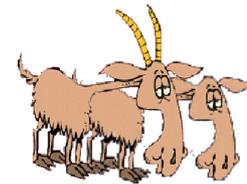
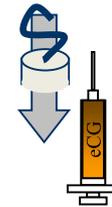
# PROGESTAGENS: Long protocol

Days

0

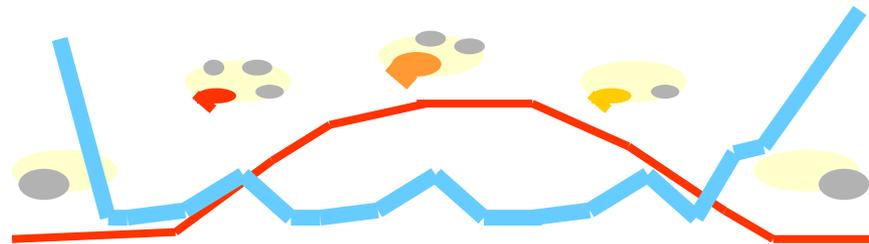
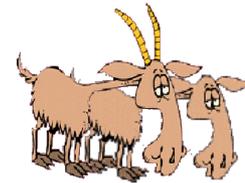
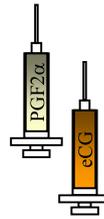
16

18



# PROGESTAGENS: Short protocol

**Days 0 9 11 13**



# **PROGESTAGENS**

## **LIMITING FACTORS**

### **EXOGENOUS**

**Origin of the hormone**  
**Protocol of administration**

### **ENDOGENOUS**

**Age**  
**Nutritional status**  
**Season**  
**Reproductive status**

# PROSTAGLANDINS

Days

0

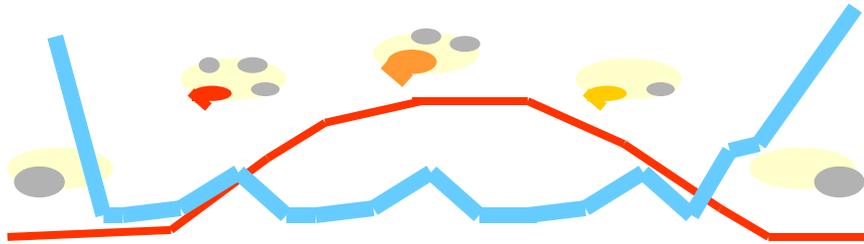
7

9

PGF<sub>2α</sub>



A.I.



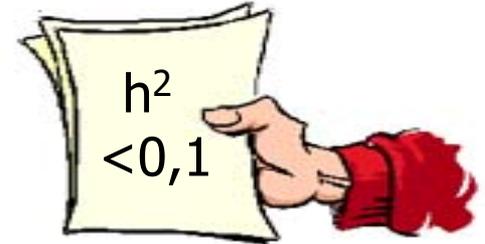
# Improvement of prolificacy

---

# Selection

---

- Possible but difficult



- Low genetic progress: low heritability of the trait
- Indirect selection on prolificacy: ovulation rate, Embryo mortality
- Several generations: 20
- Tunisia: W strain of th Barbarine breed: 160% vs 120% for ordinary Barbarine

## Crossbreeding with prolific breeds

---

Fast way to improve litter size

Heterosis: 3% for prolificacy

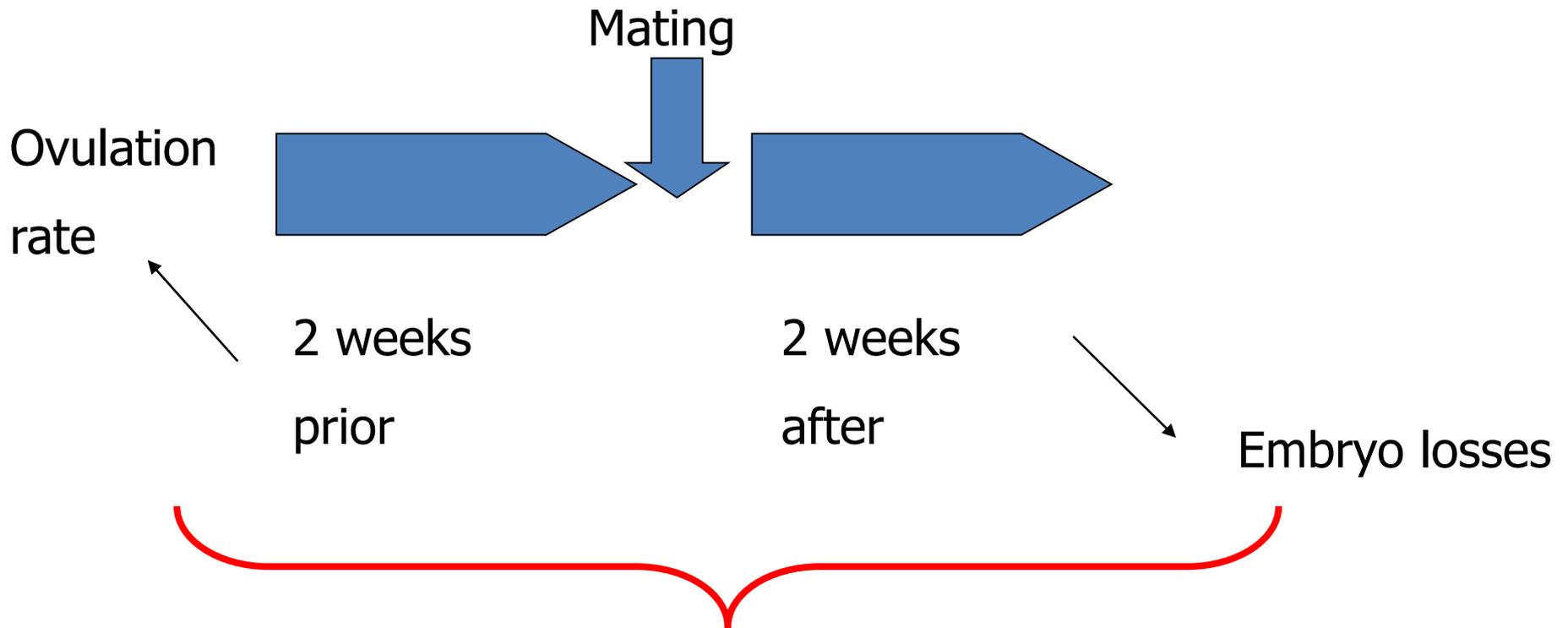
	QFO		D 'Man X QFO
Nb.	36		31
LW (Kg)	45,7±5,7		40,5±5,9
Fertility(%)	77,7		90,3
Prolificacy(%)	1,14±0,35	+ 20%	1,43±0,50

# Nutritional method: Flushing

---

Short feeding supplementation

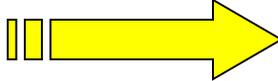
Distribution of concentrates or grazing good pastures (60% above maintenance)



Between 20 and 40 % in terms of lambs born

# Conclusions

---

- Several methods  There is no best method
- Options are dependent upon:
  - Physiological stage
  - Potential of the production system
  - Objectives, know how and financial asset of farmers
  - Products availability and effectiveness



**Thank you**

---